
Technical Memorandum
Final Update
RCRA Pond Phosphine Assessment Study Report
May 24, 2013

1.0 INTRODUCTION

The *RCRA Pond Phosphine Assessment Study Report* (“*Assessment Study Report*,” MWH, 2012a) was prepared pursuant to the *Final RCRA Pond Phosphine Assessment Study Work Plan* (“*Assessment Study Work Plan*,” MWH, 2011g) and the RCRA Pond Unilateral Administrative Order (“UAO”) for Removal Actions (EPA, 2010) as modified by an EPA letter dated October 26, 2010. This technical memorandum documents the Final Update of the Phosphine Assessment Study and the *Assessment Study Report*.

1.1 Background

The *Assessment Study Report* provides a summary of the numerous EPA-FMC meetings, FMC submittals, EPA comments and FMC revised documents that led to the *Final RCRA Pond Phosphine Assessment Study Work Plan* (“*Assessment Study Work Plan*,” MWH, 2011). As recommended in the *Assessment Study Report*, additional monitoring data was needed to meet the second study objective and to develop additional monitoring and/or gas extraction triggers for the RCRA ponds. The additional documents that were submitted under the Assessment Study are listed below:

- *Technical Memorandum - First Quarter 2012 Update for Ponds 16S and 18A - RCRA Pond Phosphine Assessment Study* (“*1Q12 Update Tech Memo*,” MWH, 2012b);
- *Technical Memorandum - Second Quarter 2012 Update for Ponds 16S and 18A - RCRA Pond Phosphine Assessment Study* (“*2Q12 Update Tech Memo*,” MWH, 2012c);
- *Framework for Post-Closure Phosphine Monitoring - RCRA Ponds* (“*Framework*,” MWH, 2012d);
- *Technical Memorandum - Third Quarter 2012 Update for Ponds 16S and 18A - RCRA Pond Phosphine Assessment Study* (“*3Q12 Update Tech Memo*,” MWH, 2012e);
- FMC’s responses to EPA’s *Draft Comments on FMC’s July 16, 2012, Framework for Post-Closure Phosphine Monitoring RCRA Ponds, FMC Facility, Pocatello, ID* (“*EPA Draft Comments*,” EPA, 2012), as clarified during an EPA-FMC conference call on September 14, 2012 (“*FMC RTC*,” FMC, 2012a); and,
- *Technical Memorandum - Fourth Quarter 2012 Update for Ponds 16S and 18A - RCRA Pond Phosphine Assessment Study* (“*4Q12 Update Tech Memo*,” MWH, 2013).

In a letter from EPA dated February 21, 2013 regarding Required Gas Extraction and Treatment at RCRA Ponds 16S and 18A; CERCLA Unilateral Administrative Order for Removal Action, Docket No. CERCLA 10-20100170 (“UAO,” effective July 12, 2010), EPA required FMC to prepare (1) Readily Implementable Interim Work Plans (IWPs) for gas extraction and treatment at Ponds 16S and 18A, and (2) within 30 days after approval of the Readily Implementable Interim Work Plans, Removal Action Work Plans for longer term operation of gas extraction and treatment at Ponds 16S and 18A.

FMC submitted the required IWPs for Gas Extraction and Treatment at Ponds 16S and 18A on March 8, 2013. In a letter dated April 16, 2013, EPA approved the IWPs for Ponds 16S and 18A and directed FMC to commence implementation of the approved IWPs for Pond 16S and Pond 18A within 48 hours of receipt. FMC’s letter dated April 18, 2013 notified EPA that gas extraction and treatment commenced on April 18, 2013 pursuant to the EPA-approved IWPs. As stated in FMC’s letter: “with the agency’s direction to commence gas extraction at Pond 16S and Pond 18A, the Phosphine Assessment Study, which was primarily designed to evaluate the rebound of phosphine concentrations at Ponds 16S and 18A and to develop triggers for gas extraction, is now moot as gas extraction has now recommenced.” Thus, FMC proceeded with preparation of this Final Update to the *Assessment Study Report* (“*Final Update*”).

1.2 Study Objectives

As specified in EPA’s October 26, 2010 modification to the RCRA Pond UAO SOW addendum, the objectives of the Assessment Study were to collect, assemble and evaluate:

“the data and information needed to: 1) demonstrate where and how frequently monitoring should be conducted at each of the RCRA ponds to protect human health and the environment, and 2) to determine the phosphine concentrations which if met or exceeded would trigger additional monitoring and/or phosphine gas extraction and treatment to protect human health and the environment.”

1.3 Scope of the Assessment Study Report, Quarterly Updates and Final Update

The *Assessment Study Report* presented an evaluation of the data and recommendations regarding: 1) where and how frequently monitoring should be conducted at each of the RCRA ponds to protect human health and the environment, and 2) the phosphine (PH₃) concentrations at specified monitoring locations that if met or exceeded would trigger maintenance activity(ies), additional monitoring and/or PH₃ gas extraction and treatment to protect human health and the environment. All relevant sampling and monitoring results through January 13, 2012 were included in the *Assessment Study Report* evaluation including data from the following:

- Pond 16S monitoring and data collected prior to completion of the gas extraction and treatment system (GETS) operation pursuant to the Pond 16S UAO;

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- The results for RCRA Ponds reported in the Site-Wide Gas Assessment Report;
 - Monitoring and GES operation data for Pond 15S prior to and after approval of the Pond 15S Interim Work Plan for Gas Extraction and Treatment;
 - Monitoring and GES operation data for Pond 17 prior to and after approval of the Pond 17 Interim Work Plan for Gas Extraction and Treatment;
 - Monitoring pursuant to the Air Monitoring Plan;
 - Monitoring results collected pursuant to the Assessment Study Work Plan; and,
 - Monitoring and GES operation data for Pond 18A prior to and after approval of the Pond 18A Summary Interim Work Plan for Gas Extraction and Treatment.

As recommended in the *Assessment Study Report*, the assessment study was extended and FMC prepared quarterly updates of the evaluations for Ponds 16S and 18A with respect to meeting the second study objective. The *1Q through 4Q12 Update Tech Memos* include the monitoring data and updated evaluations for Ponds 16S and 18A covering the data from January 2012 through January 2013.

This *Final Update* presents the monitoring data and updated evaluation of the Pond 16S and 18A covering data through April 2013, which is the last round of monitoring at these ponds prior to the EPA April 16, 2013 letter directing commencement of gas extraction and treatment that was initiated at those ponds on April 18, 2013. This *Final Update* also provides monitoring results and evaluations for Ponds 8S, 8E, 9E, 17 and the Phase IV ponds that have been updated with data through April 2013.

As described in the *Assessment Study Report*, gas extraction and treatment was in progress at Pond 15S throughout the Assessment Study period and as of the date of that report. Gas extraction and treatment at Pond 15S continued throughout 2012 and, upon completion of the 12th continuous monthly performance standard compliance demonstration monitoring in April 2013, gas extraction and treatment ceased at Pond 15S on April 23, 2013. The Pond 15S monitoring and results are not included in this *Final Update* since the monitoring was all performed during gas extraction and treatment operation so that data is not useful toward meeting the second study objective. The Pond 15S monitoring results through April 2013 have already been provided to EPA via the UAO monthly reports.

The *Air Monitoring Plan* and *Assessment Study Work Plan* monitoring performed from January through April 2013 is summarized in Section 2.0. The monitoring results are summarized in Section 3.0. An evaluation of the monitoring results is presented in Section 4.0 and findings of the assessment study upon its conclusion in April 2013 are presented in Section 5.0.

2.0 MONITORING PROGRAMS AT THE RCRA PONDS DURING 1Q AND APRIL 2013

Section 2 of the *Assessment Study Report* summarized the monitoring elements and timeline of the RCRA Pond UAO and Assessment Study work plans performed through December 2011, and Section 2 of the *1Q12, 2Q12, 3Q12 and 4Q12 Update Tech Memos* updated the monitoring elements for Ponds 16S and 18A through January 2013. Those summaries are not repeated here.

The elements, timeline and schedule of monitoring at Ponds 16S and 18A from January through April 2013 pursuant to the *RCRA Pond UAO Air Monitoring Plan – Part I* (“*Air Monitoring Plan*,” MWH, 2011), modified as recommended in the *1Q12 Update Tech Memo* and for the Pond 16S TMP appurtenance leak detection monitoring as described in RCRA Pond UAO Weekly Report #114, are summarized below:

Pond	Cap Perimeter Surface Scan and Appurtenance Monitoring ^{1,2}			
	Frequency	Initiated	End of 1 st Year	Frequency 1Q13
18A	Monthly	May 2012 ³	NA	Monthly
16S (perim ≥ 2,000)	Monthly	April 2012 ⁴	NA	Monthly

¹ Appurtenance monitoring includes air release (breathing zone) and leak detection. Contingent cap surface and/or low-lying areas monitoring would be on same schedule if triggered.

² Pursuant to RCRA Pond UAO Weekly Report #114 (October 17, 2012), the GETS piping from the TMP enclosure to the solenoid valve was added to the Pond 16S appurtenance leak detection monitoring procedures beginning during the November 2012 monitoring event.

³ As recommended in the *1Q12 Update Tech Memo*, FMC increased the Pond 18A perimeter surface scan and appurtenance monitoring frequency to monthly beginning in May 2012 to align the Pond 18A monitoring with the Pond 16S monitoring with respect to the *Air Monitoring Plan*.

⁴ As reported in the *1Q12 Update Tech Memo*, the Pond 16S north perimeter pipe monitoring result on April 3, 2012 was greater than 2,000 ppm, which triggered monthly cap perimeter and appurtenance monitoring pursuant to the *Air Monitoring Plan*. Monthly cap perimeter and appurtenance monitoring was initiated in April (performed on April 4, 2012).

The Pond 16S soil gas, perimeter pipe standpipe and TMP monitoring and Pond 18A soil gas and perimeter pipe standpipe monitoring performed pursuant to the *Assessment Study Work Plan* as modified by the *Assessment Study Report* is summarized below:

Pond	Monitoring	Sampling Pts	Start Monitoring	Frequency 1Q13
18A	Soil Gas ¹	10 / 8	Oct-10	Monthly
	Perim Pipe	2	Dec-10	Monthly
16S	Soil Gas	14	Dec-10	Monthly
	Perim Pipe	4	Oct-10	Monthly
	TMP	8	Nov-10	Monthly

¹ Shallow / step-out soil gas sampling points. Step-outs installed during week of April 25, 2011 and monitoring commenced May 4, 2011.

The elements, timeline and schedule of monitoring at Ponds 8S, 8E, 9E, 17 and the Phase IV ponds during the period January 2012 through April 2013 pursuant to the *RCRA Pond UAO Air Monitoring Plan – Part I* (“*Air Monitoring Plan*,” MWH, 2011) are summarized below:

Pond	Cap Perimeter Surface Scan and Appurtenance Monitoring ¹			
	Frequency	Initiated	End of 1 st Year	Current Frequency
8S	Annual	3Q2011	3Q2012	Annually
8E	Quarterly	4Q2011	3Q2012	Annually
9E	Annual	3Q2011	3Q2012	Annually
17	Quarterly	4Q2011	3Q2012	Annually
Phase IV	Annual	3Q2011	3Q2012	Annually

¹ Appurtenance monitoring includes air release (breathing zone) and leak detection, contingent cap surface and/or low-lying areas monitoring would be on same schedule if triggered.

The 2013 annual cap perimeter surface scan and appurtenance monitoring at Ponds 8S, 8E, 9E, 17 and the Phase IV ponds was scheduled for the third quarter of 2013. However, in advance of an EPA-FMC meeting on March 26, 2013 to continue discussion on development of the long-term PH3 monitoring and triggers for gas extraction and treatment at the RCRA Ponds and to provide current data for these ponds for this *Final Update*, FMC accelerated the schedule for appurtenance monitoring at Ponds 8E and 17. The appurtenance monitoring was performed concurrently with an unscheduled round of perimeter pipe monitoring at Ponds 8E and 17, again to provide current data for these ponds for this *Final Update*.

3.0 RESULTS OF MONITORING

Section 3 of the *Assessment Study Report* summarized the RCRA Pond UAO monitoring results through January 13, 2012. Those results are not repeated here, with the exception of the tables of monitoring results for Ponds 8S, 8E, 9E, 16S, 17, 18A and the Phase IV ponds that have been updated as described below. Note that all of the monitoring results discussed in this *Final Update* have previously been submitted electronically to EPA in the monthly RCRA Pond UAO reports through April 2013.

3.1 Ponds 8S, 8E, 9E, 17 and the Phase IV Ponds

The annual pond perimeter surface scans were performed at Ponds 8S, 9E and the Phase IV ponds during August 2012 as shown on Table 3.3a. Quarterly pond perimeter surface scans were performed at Ponds 8E and 17 during February, May and August 2012 as shown on Table 3.3a. Phosphine was not detected during any of the perimeter surface scans at these ponds.

Appurtenance monitoring was performed at Ponds 8S, 9E and the Phase IV ponds during August 2012 as shown on Tables 3.4, 3.5 and 3.6 respectively. Phosphine was not detected during any

of the 2012 appurtenance monitoring events at these ponds. Appurtenance monitoring was performed at Ponds 8E and 17 during February, May and August 2012 and March 2013 as shown on Tables 3.7 and 3.13 respectively. Phosphine was not detected during any of the 2012 or 2013 appurtenance monitoring events at these ponds.

As described in Section 2, perimeter pipe monitoring was performed at Ponds 8E and 17 during March 2013 as shown on Tables 3.9a and 3.9c respectively. An evaluation of these perimeter pipe monitoring results is contained in Section 4.

3.2 Pond 16S

The 2012 perimeter surface scan, appurtenance, soil gas, perimeter gas collection pipe, and temperature monitoring point (TMP) monitoring results are described in the *1Q* through *4Q12 Update Tech Memos* and are not repeated here.

As shown on Table 3.3b, PH₃ was not detected during the 2013 (through April) perimeter surface scan monitoring events. The January 2013 perimeter surface scan was not performed at Pond 16S due to snow cover throughout the month.

Phosphine was not detected during the January through April 2013 appurtenance monitoring at Pond 16S as shown on Table 3.10.

Soil gas monitoring was performed at Pond 16S monthly during January through April 2013 as shown on Table 3.11. Phosphine was not detected in the breathing zone or near (4 to 6 inches above) the ground surface during any of the soil gas monitoring events at Pond 16S from January through April 2013. Phosphine was detected in all fourteen of the soil gas probes during the 2013 (through April) monitoring events. Of the total 56 soil gas readings (4 monitoring events at the 14 probes) during January through April 2013, none of the readings were 0.00 ppm PH₃. The PH₃ results ranged from 0.02 to 252 ppm for the 56 non-zero PH₃ readings. Seventeen (30%) of the 56 non-zero readings were below 0.3 ppm, 10 (18%) was between 0.3 and 1.0 ppm, sixteen (28%) were between 1.0 and 10 ppm, and thirteen (23%) were above 10 ppm PH₃. The highest PH reading (252 ppm) was recorded at probe 11 (located immediately west of the north perimeter pipe standpipe) during the February 12, 2013 monitoring event. Soil gas probe 11 was also the location of the highest soil gas measurement at Pond 16S during the assessment study monitoring (439 ppm on March 6, 2012).

Pond perimeter gas collection pipe monitoring at Pond 16S was performed monthly during January through April 2013 as shown on Table 3.9b. All four standpipes (north, south, east and west) were monitored. Phosphine was not detected in the breathing zone during any of the perimeter pipe monitoring events at Pond 16S. Phosphine was detected in the perimeter pipe source gas at concentrations ranging from 110 ppm (at the west standpipe) to 12,609 ppm (at the north standpipe) on April 16, 2013. Perimeter pipe source gas PH₃ concentrations generally remained within the same range during January through March 2013, then resumed the predicted

increasing trend during the April 2013 monitoring with new maximums at the south and north standpipes.

Temperature monitoring point (TMP) monitoring at Pond 16S was performed monthly during January through April 2013 as shown on Table 3.12 (Updated 4Q12). Phosphine was not detected in the breathing zone during any of the TMP monitoring events at Pond 16S. As expected, PH₃ concentrations continued to increase (“rebound”) during 2013 (through April) and, in April 2013, PH₃ concentrations ranged from 20,621 to 59,958 ppm in individual TMPs and averaged 36,281 ppm. A more detailed discussion of the Pond 16S TMP, perimeter pipe and soil gas monitoring results is presented in Section 4.

3.3 Pond 18A

The 2012 perimeter surface scan, appurtenance, soil gas, and perimeter gas collection pipe monitoring results are described in the *1Q through 4Q12 Update Tech Memos* and are not repeated here.

As shown on Table 3.3b, PH₃ was not detected during the 2013 (through April) perimeter surface scan monitoring events. The January 2013 perimeter surface scan was not performed at Pond 18A due to snow cover throughout the month.

Monthly appurtenance monitoring was performed January through April 2013 as shown on Table 3.14. Phosphine was not detected during the 2013 (through April) appurtenance ambient air and leak detection monitoring events at Pond 18A. Phosphine also was not detected during the inside appurtenance monitoring, with the exception of PH₃ reported inside the LS-01 manhole at 0.05 ppm during the April 2013 monitoring event and inside the temperature and pressure instrument panel (T&P panel) at 0.58 ppm during the February 13, 2013 monitoring event. The conduit leading to the T&P panel was re-sealed and PH₃ was not detected during the re-monitoring performed on February 14, 2013.

Shallow and step-out soil gas monitoring was performed at Pond 18A monthly during January through April 2013 as shown on Table 3.16. Phosphine was not detected in the breathing zone or near (4 to 6 inches above) the ground surface during any of the shallow or step-out soil gas monitoring events at Pond 18A. Phosphine was detected in nine of the ten shallow and five of the eight step-out soil gas probes during the 2013 (through April) monitoring events. Of the total 40 shallow soil gas readings (4 monitoring events at the 10 shallow probes) during January through April 2013, 14 (35%) of the readings were 0.00 ppm PH₃. The non-zero PH₃ results ranged from 0.01 to 243 ppm for the 26 non-zero PH₃ readings. Eleven (42%) of the 26 non-zero readings were below 0.3 ppm, three (12%) were between 0.3 and 1.0 ppm, five (19%) were between 1.0 and 10 ppm, and seven (27%) were above 10 ppm PH₃. The highest PH₃ reading (243 ppm) was recorded at probe 4 during the February 13, 2013 monitoring event. Soil gas probe 4 was also the location of the highest soil gas measurement during the assessment study

monitoring to date (over 1,000 ppm during the February and March 2011 monitoring events, performed just prior to and immediately after initiation of gas extraction and treatment at Pond 18A). Of the total 32 step-out soil gas readings (4 monitoring events at the 8 step-out probes) during October 2012 through January 2013, 14 (44%) of the readings were 0.00 ppm PH₃. The non-zero PH₃ results ranged from 0.01 to 0.88 ppm for the eighteen non-zero PH₃ readings. Fifteen (83%) of the 18 non-zero readings were below 0.3 ppm and three (17%) were between 0.3 and 1.0 ppm.

Pond perimeter gas collection pipe monitoring at the south and east standpipes was performed monthly during January through April 2013 as shown on Table 3.9b. The PH₃ concentrations in the south and east perimeter pipe source gas ranged from 1,465 to 2,445 ppm and 6,128 to 12,710 ppm, respectively, during 2013 (through April). A more detailed discussion of the Pond 18A perimeter pipe and soil gas monitoring results is presented in Section 4.

4.0 EVALUATION OF MONITORING RESULTS

The Ponds 8S, 8E, 9E, 16S, 17, 18A and the Phase IV ponds monitoring results through April 2013 were used to complete the data evaluations presented below.

4.1 Ponds 8S, 8E, 9E, and the Phase IV Ponds

As presented in Tables 3.3a and 3.4 to 3.7, the perimeter surface scan and appurtenance monitoring (leak detection and ambient air) PH₃ results for Ponds 8S, 8E, and the Phase IV ponds were entirely non-detect (0.00 ppm). For Pond 9E, the perimeter surface scan PH₃ results were entirely non-detect and appurtenance monitoring PH₃ results were primarily non-detect (only 5 readings were 0.02 ppm). As stated in the *Assessment Study Report*, graphical or statistical evaluation of this data would not be meaningful and was not performed.

An evaluation of the soil gas monitoring results for Pond 8E (July 2010 and quarterly from 4Q10 to 3Q11) and perimeter pipe PH₃ concentrations for Ponds 8S, 9E and the Phase IV ponds is presented in Section 4.1 of the *Assessment Study Report*. As no additional monitoring of soil gas at Pond 8E or perimeter pipe monitoring at Ponds 8S, 9E and the Phase IV ponds was required or collected, those evaluations have not been updated or reprinted here.

An evaluation of the distribution of the fourteen Pond 8E perimeter pipe PH₃ monitoring results was performed (results are presented on Table 3.9a). In summary,

- The fourteen result (n = 14) data set fails normality tests (Shapiro-Wilks and probability plot tests);
- The data point from the area-wide gas assessment (1,800 ppm PH₃, July 29, 2010) tests as an outlier using Dixon's outlier test;

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- After removing the 1,800 ppm value, the thirteen result ($n = 13$) data set tests as normally distributed using Shapiro-Wilks and probability plot tests;
 - The log-transformed $n = 14$ data set tests as normally distributed using Shapiro-Wilks and probability plot tests (i.e., $n = 14$ data set tests as lognormally distributed).

In conjunction with the distribution evaluation, the data set was evaluated for trend using the non-parametric Mann-Kendall test, two-sided at the 95% confidence level ($\alpha = 0.05$). The Mann-Kendall test for trend is recommended as a robust non-parametric test for trends in data over time. For the “original” fourteen result data set and the thirteen result data set (outlier removed), the critical Z-score equals 1.97 (if $|Z| > 1.97$, then $p < 0.05$ and trend is significant). The results of the Mann-Kendall trend tests are summarized below:

- The original 14 value data set shows no significant trend (Z-score of -0.98, p-value of 0.33); and,
- The 13 value data set also shows no significant trend (Z-score of -0.30, p-value of 0.76).

The average and standard deviation for the thirteen result ($n = 13$) data set of perimeter pipe PH3 concentration were calculated as 701 ppm and 178 ppm, respectively. Figure 4-1 shows a graph of the Pond 8E perimeter pipe monitoring results, including the 1,800 ppm PH3 value from the site-wide gas assessment, and the average and average plus / minus one standard deviation for the $n = 13$ data set. In summary, the Pond 8E perimeter pipe monitoring results are normally or lognormally distributed depending on whether the site-wide gas assessment result of 1,800 ppm is rejected as an outlier or retained, and there is no evidence of a trend at 95% confidence regardless of the status of the site-wide result.

Overall, average PH3 concentrations ranged from 0 to about 1,060 ppm (Pond 12S) in perimeter piping at Ponds 8S, 8E, 9E and the Phase IV ponds. The perimeter piping at Pond 8E averaged 701 ppm (for the $n = 13$ data set). The perimeter surface scan and appurtenance monitoring results at Ponds 8S, 8E, 9E and the Phase IV ponds indicate a very low potential for PH3 release to ambient air at concentrations that would represent a potential threat to human health and the environment.

4.2 Pond 17

As described in Section 4.3 of the *Assessment Study Report*, operation of GES units connected to perimeter piping at Ponds 17 during the assessment study period limits the utility of the monitoring data toward the second study objective. The GES units were operated at Pond 17 from October 14, 2010 until December 15, 2011. The monitoring results during this period were primarily evaluated in the context of assessing the effectiveness of gas extraction.

Prior to and throughout GES operation and during the 2012 monitoring events at Pond 17, PH₃ was not detected during any of the perimeter surface scans or appurtenance ambient air or leak detection monitoring (refer to Tables 3.3a and 3.13, respectively). Phosphine also was not detected during the March 2013 appurtenance ambient air or leak detection monitoring event at Pond 17.

As shown on Table 3.9c, the Pond 17 perimeter pipe source gas PH₃ concentrations ranged from 0.00 ppm (NE standpipe) to 2.81 ppm (SW standpipe) on December 13 and 14, 2011, one or two days prior to cessation of gas extraction and treatment. During the perimeter pipe monitoring conducted on March 22, 2013, PH₃ concentrations ranged from 23 ppm (NE standpipe) to 815 ppm (SW standpipe) indicating an increase (or “rebound”) in PH₃ concentrations over the approximately 15 months since the cessation of gas extraction and treatment as shown on Figure 4-1a.

The 2012 perimeter surface scan and appurtenance monitoring results and March 2013 appurtenance monitoring results at Pond 17 indicate a very low potential for PH₃ release to ambient air at concentrations that would represent a potential threat to human health and the environment at the current perimeter pipe PH₃ concentrations.

4.3 Pond 16S

As stated in the *Assessment Study Report*, the concept for the assessment monitoring at Pond 16S during the study period was to evaluate the “rebound” of PH₃ concentrations beneath the final cap in order to develop a relationship between PH₃ concentrations in TMPs, pond perimeter piping, perimeter soil gas and the potential for detection (release) of PH₃ in ambient air at levels that could represent a risk to human health and the environment.

Figure 4-3 shows the Pond 16S average TMP and average and individual perimeter pipe standpipe monitoring results for November 30, 2010 through April 16, 2013 (125 weeks). As shown on the figure, after following an essentially flat trend during 4Q12 the average TMP concentrations resumed an increasing trend during from January to April 2013.

As shown on Figure 4-4, the average TMP PH₃ concentration trend remained representative of individual TMPs during 2013 (through April). During 2013 (through April), the average TMP concentration trend line was close to the TMP 2 (north side) trend, the TMPs 5 and 6 (south) trend lines remained above the average trend, and the TMPs 2, 3, 4 and 8 (north) trend lines remained below the average trend. Flow to TMP 7 could not be established after the January 8, 2013 monitoring event, so that the trend line is truncated at that date on Figure 4-4. The average TMP concentration increased about 78% from December 2012 to April 2013. An increasing trend was evident at all TMPs (except TMP 7 as discussed above). The increasing trend for the average TMP PH₃ concentration was influenced by increases at TMPs ranging from about 20%

(TMP 5) to almost 400% (TMP 4). An exponential regression using Microsoft Excel provides the best fit for the average TMP data and yields a high coefficient of prediction (R^2) of 0.95.

The Pond 16S perimeter pipe PH3 monitoring results are shown on Figure 4-5. Similar to TMP PH3 concentrations, perimeter pipe PH3 concentrations increased from December 2012 to April 2013. The spatial variability of PH3 concentrations between the four standpipes continued from January through April 2013. The highest PH3 concentrations were measured at the north standpipe and the next highest concentrations were measured at the east standpipe. The south and west standpipe PH3 concentrations remained one to two orders of magnitude lower than the north and east standpipes. An exponential regression using Microsoft Excel provides the best fit for the average perimeter pipe data and yields a fair coefficient of prediction (R^2) of 0.79, which is unchanged from the R^2 for the regression on the data through January 2013 as presented in the *4Q12 Update Tech Memo*. The results of regression evaluation on the north and east perimeter pipe data remained similar to the average (e.g., exponential curve, R^2).

As described in the *Assessment Study Report* and *1Q through 4Q12 Update Tech Memos*, the variability of perimeter pipe monitoring results is likely influenced by the trend in barometric pressure preceding the monitoring event. Observationally, higher PH3 concentrations in perimeter pipe are associated with a falling barometer while concentrations tend to decrease during a rising barometer. The monitored PH3 concentration in perimeter pipe appears to be influenced by a changing barometric pressure trend over 24 or more hours prior to monitoring and not the absolute barometric pressure at the time of monitoring. The barometric pressure was relatively steady (a pressure change of about 0.1 and 0.2 inches Hg) during the 24 hours preceding the January 8 and April 16, 2013 Pond 16S perimeter pipe monitoring events. The barometric pressure rose relatively steadily (a pressure change of about 0.3 and 0.45 inches Hg) during the 24 hours preceding the February 12 and March 19, 2013 monitoring events. The January and April 2013 perimeter pipe monitoring results do not appear to have been significantly influenced by trends in barometric pressure; however, the February and March 2013 results may have been influenced (lower than the January and April results and the average perimeter pipe trend line) by the increasing barometric pressure preceding those monitoring events.

The Pond 16S soil gas monitoring results are shown on Figure 4-7. Consistent with the 2012 soil gas monitoring results, PH3 was detected in all of the soil gas probes during the January through April 2013 monitoring events. Phosphine concentrations greater than 200 ppm were measured during the February 12, 2013 monitoring at probes 10, 11 and 12 (north side, to the west and east of the north standpipe) and during the March 19, 2013 monitoring at probe 12. Soil gas PH3 concentrations were lower during the April 2013 monitoring events with the highest reading of 133 ppm at probe 12 (north side, immediately east of the north standpipe).

As an update, the data sets from soil gas probes 5, 11 and 12 (the rationale for evaluating these soil gas results is described in the *Assessment Study Report*) were re-evaluated for trend using the non-parametric Mann-Kendall test, two-sided at the 95% confidence level ($\alpha = 0.05$). The Mann-Kendall test for trend is recommended as a robust non-parametric test for trends in data over time. For these data sets $n=27$ and the critical Z-score equals 1.97 (if $|Z| > 1.97$, then $p < 0.05$ and trend is significant). The results of the Mann-Kendall trend tests are summarized below:

- Probe 5 shows an increasing trend (Z-score of 3.03, p-value of 0.002);
- Probe 11 shows an increasing trend (Z-score of 4.5, p-value of 6E-6); and,
- Probe 12 shows an increasing trend (Z-score of 4.44, p-value of 9E-6).

The trend results for the soil gas probes 5, 11 and 12 data through April 16, 2013 continue to show increasing trends at probes 5, 11 and 12 (same as the test for trend results reported in the *3Q* and *4Q12 Update Tech Memos*).

As described in the *Assessment Study Report*, the soil gas monitoring results are likely influenced by the trend in barometric pressure preceding the monitoring event similar to the perimeter pipe results. As described above, the barometric pressure was relatively steady during the 24 hours preceding the January and April 2013 soil gas monitoring events and rose steadily during the 24 hours preceding the February and March 2013 monitoring events. However, the soil gas results for probes 11 and 12 exhibited a pattern of temporal variability that was nearly the inverse of the north and east perimeter pipe monitoring results during the 1Q through April 2013 monitoring events as shown on Figure 4-8. The 1Q and April 2013 Pond 16S soil gas results continued to follow a visually apparent increasing trend that appears to be independent of pre-monitoring event barometric pressure change.

Overall, the Pond 16S TMP PH3 concentration ranges measured during 1Q and April 2013 continued the increasing trend discussed in the *Assessment Study Report* and the *1Q* through *4Q12 Update Tech Memos*. The 1Q13 Pond 16S perimeter pipe standpipes PH3 concentrations remained in the same range as 4Q12; however, the April 2013 north and east perimeter pipe PH3 concentrations resumed the predicted increasing trend. The January through April 2013 soil gas results showed a visually apparent increasing trend that was also apparent in 4Q12, and is consistent with the statistically significant increasing trend in the data from shallow soil gas probes 5, 11 and 12. From January through April 2013, phosphine was not detected during the perimeter surface scans, appurtenance ambient air and leak detection and inside appurtenance monitoring, and breathing zone and ground level (4 to 6 inches AGS) readings during the soil gas monitoring events. These non-detect results indicate that the current PH3 concentrations beneath the Pond 16S cap have a low potential for PH3 release to ambient air at levels that could represent a potential threat to human health and the environment.

4.4 Pond 18A

The monitoring results prior to and during operation of the GES unit connected to east perimeter piping at Pond 18A are summarized in the *Assessment Study Report* and not repeated here. An update of the evaluation of Pond 18A post-GES operation PH3 monitoring data is presented below.

As shown on Figure 4-10, after GES operation was suspended on October 5, 2011, Pond 18A east perimeter pipe PH3 concentrations were in the range of 1,200 to 2,500 ppm during December 2011 and January 2012 and the PH3 concentration had increased to the range of 3,184 (December 2012) to 9,937 ppm (October 2012) during 4Q12. In the south standpipe, PH3 concentrations were in the range of 450 to 550 ppm during December 2011 and January 2012 and the PH3 concentration had increased to the range of 691 (December 2012) to 2,122 ppm (October 2012) during 4Q12. The east and south standpipe PH3 concentration trends steepened (compared to the trend through 4Q12) during 1Q through April 2013. The April 2013 perimeter pipe monitoring results for the east (12,710 ppm) and south (2,445 ppm) standpipes were the highest PH3 concentrations since gas extraction and treatment ceased on October 5, 2013. The January through April 2013 Pond 18A east and south perimeter pipe standpipe results did not appear to be influenced by changing barometric pressure; however, similar to the Pond 16S perimeter pipe monitoring, relatively stable barometric pressure conditions preceded these perimeter pipe monitoring events at Pond 18A. The spatial variability in the PH3 concentrations between the east and south standpipes (i.e., spatial variability) remained consistent from January through April 2013.

The Pond 18A soil gas monitoring results are shown on Figures 4-10 and 4-12. Phosphine was detected in nine of the ten shallow and five of the ten step-out soil gas probes during the January through April 2013 monitoring events compared to six of the ten shallow and six of the ten step-out soil gas probes during the 4Q12 monitoring events. The higher PH3 concentration in the east and south perimeter standpipes in April 2013 are not reflected in the higher shallow soil gas PH3 results for that monitoring event. The January through April 2013 soil gas monitoring results did not appear to be significantly influenced by changing barometric pressure given the relatively stable barometric pressure conditions that preceded these soil gas monitoring events.

Phosphine was not detected during the Pond 18A appurtenance ambient air and leak detection monitoring and perimeter surface scans performed from January through April 2013. The overall monitoring results during this period indicate that the current PH3 concentrations beneath the Pond 18A cap have a low potential for PH3 release to ambient air at levels that could represent a potential threat to human health and the environment.

5.0 UPDATED FINDINGS

The phosphine monitoring performed over the approximately 30-month study period pursuant to the *Air Monitoring Plan*, *Assessment Study Work Plan* and, to a lesser extent, the Interim Work Plans for Gas Extraction and Treatment yielded extensive, systematically-collected phosphine monitoring data sets for the RCRA Ponds. The *Assessment Study Work Plan* objectives were to collect “*the data and information needed to: 1) demonstrate where and how frequently monitoring should be conducted at each of the RCRA ponds to protect human health and the environment, and 2) to determine the phosphine concentrations which if met or exceeded would trigger additional monitoring and/or phosphine gas extraction and treatment to protect human health and the environment.*” Overall, the monitoring results and evaluation indicate that the study met the first objective and, importantly, established that the appropriate PH₃ monitoring locations and frequency are not the same for all of the ponds and depend on the status and results to date from each pond. The findings for similar and/or individual ponds are discussed below.

Ponds 8S, 8E, 9E and the Phase IV ponds

The Assessment Study met the first objective with respect to Ponds 8S, 8E, 9E and the Phase IV ponds. The monitoring locations and frequency at these ponds were adequate to evaluate the potential for phosphine release from these ponds. The monitoring results from Ponds 8S, 8E, 9E and the Phase IV ponds indicate a very low potential for PH₃ release to ambient air at concentrations that could represent a potential threat to human health and the environment. Further, there is no indication that additional monitoring or phosphine gas extraction should or will be triggered. The data from these ponds provide lines of evidence that the trigger for phosphine gas extraction is higher than 1,800 ppm PH₃ in perimeter pipe. However, because the PH₃ concentrations at these ponds were below a “trigger” level, the data do not allow an evaluation that fully meets the second study objective. Note that the Framework incorrectly cited the maximum Pond 8E perimeter pipe concentration as 1,700 ppm rather than the correct result from July 29, 2010 of 1,800 ppm.

As clarified in FMC’s response to Specific Comment 5 of the *EPA Draft Comments*, because virtually all the monitoring results to date for Ponds 8S, 8E, 9E, and the Phase IV ponds are 0.00 ppm PH₃, the results from these ponds are not very useful for identifying a subset of predictive monitoring elements. The extensive monitoring data set of 0.00 ppm results is not an “absence of data,” rather the data support the findings in *Assessment Study Report* and this Final Update. The *Framework* did not propose a PH₃ concentration of 1,800 ppm as a trigger for any action at any of the ponds and did not propose different trigger levels at different ponds. As stated in FMC’s response to Specific Comment 3 of the *EPA Draft Comments* and presented in the *Framework* and draft Section 3 of the amended RCRA Pond Post-Closure Plan (“*Section 3 PCP*,” FMC, 2012b), the monitoring and triggers for increased monitoring frequency,

maintenance, additional monitoring elements and/or gas extraction and treatment are the same for all of the RCRA Ponds.

Pond 16S

The Assessment Study and monitoring through April 2013 meet the first objective with respect to Pond 16S. As expected and confirmed by data evaluation, PH₃ concentrations in TMPs, perimeter pipe and shallow soil gas (through April 2013) at Pond 16S are increasing. As described in the Phosphine Assessment Study Work Plan (“*Work Plan*”), the intent of the study was to establish a relationship between data such as the range of PH₃ concentrations in perimeter piping, in perimeter soil gas, and at the ground surface around the pond perimeter and appurtenances to develop a trigger(s) for additional (more frequent) monitoring and/or gas extraction.

Figure 5-1a is a graph of the Pond 16S average TMP, north perimeter pipe and soil gas probe 11 that illustrates the relationship between PH₃ concentrations at these monitoring points over the study period. The perimeter pipe concentration greater than 2,000 ppm that was found during the April 3, 2012 monitoring event at the north standpipe triggered increased frequency (monthly) for surface scan and appurtenance monitoring (pursuant to provisions of the Air Monitoring Plan), as shown on Figure 5-1a. Figure 5-1a also shows a Microsoft Excel generated best-fit regression through the data. As described above, the coefficient of prediction (R^2) for an exponential regression on the average TMP concentration is very high (0.95). As shown on Figure 5-1a, an exponential regression through the north standpipe results from week 12 (February 22, 2011) to April 13, 2013 yields a reasonably good R^2 of 0.80. As shown on Figure 5-1b, an exponential regression through the north standpipe results from week 50 (November 8, 2011) to April 13, 2013 yields a lower R^2 of 0.69. As stated in the *4Q12 Update Tech Memo*, the regressions (as presented in the 4Q12 update) suggested that the Pond 16S north perimeter pipe concentration would increase to a range from 8,000 to 10,000 ppm during 1Q13. The lower than predicted January 2013 result of 5,038 ppm did not disprove that evaluation. The April 2013 north perimeter pipe PH₃ result of 12,609 ppm was in-line with the overall trend and predicted range.

Potentially due to barometric pressure trend influences, the best-fit regression on the soil gas probe 11 data from week 41 (September 6, 2011 – prior detections were less than 0.1 ppm) to April 13, 2013 is a second order polynomial that indicates a flat trend and has a very poor R^2 of 0.03 as shown on Figure 5-1a. Specific Comment 7 of the *EPA Draft Comments* stated that seasonal variation could account in part for the poor R^2 for shallow soil gas probe 2 at Pond 18A. In response to this comment with respect to Pond 16S, the February 7 and March 6, 2012 soil gas results for probe 11 were removed from the data set for the purpose of regression analysis. As shown on Figure 5-1b, the best-fit regression on the soil gas probe 11 data from week 41 (September 6, 2011 – prior detections were less than 0.1 ppm) to April 13, 2013 is a second

order polynomial with a better but still poor R^2 of 0.31, and indicates an increasing trend that is consistent with the results of the Mann-Kendall test for trend for probes 5, 11 and 12 soil gas results.

Because the surface scans to date at Pond 16S have not detected PH₃, Figure 5-1a does not show any surface scan results. Phosphine was and is expected to be detected eventually during surface scans as was assumed on Figure 5-1 in the *Work Plan*. As such, the Pond 16S data through April 2013 cannot fully meet the second study objective. However, as described in Section 1.1, EPA has required resumption of gas extraction and treatment at Pond 16S, which FMC initiated on April 18, 2013. That action effectively truncated the assessment study.

Pond 18A

The Assessment Study and monitoring through April 2013 meet the first objective with respect to Pond 18A. As described above, Pond 18A east and, to a lesser degree, south perimeter pipe standpipe PH₃ concentrations measured from January through April 2013 show a continuation of the increasing trend that began in December 2011. As shown on Figures 5.2, the exponential regression using Microsoft Excel that provides the best fit for the east perimeter pipe data yields a fair coefficient of prediction (R^2) of 0.72. The R^2 (residual error) is primarily due to the significant difference between the October (9,937 ppm) and December (3,184 ppm) 2012 perimeter pipe monitoring results. By removing those two data points, the exponential regression yields a relatively good R^2 of 0.82.

As shown on Figure 5-2, the best-fit regression on the results from shallow soil gas probe 2 from November 22, 2011 to April 15, 2013 is a second order polynomial and has a poor R^2 of 0.22. Specific Comment 7 of the *EPA Draft Comments* stated that seasonal variation could account in part for the poor R^2 for shallow soil gas probe 2 at Pond 18A. In response to this comment, the March 6, 2012 soil gas result for probe 2 was removed from the data set for the purpose of regression analysis. The best-fit regression on the soil gas probe 2 data remains a second order polynomial with a slightly better R^2 of 0.35. The best-fit regression on the results from shallow soil gas probe 4 from November 22, 2011 to April 15, 2013 is a second order polynomial and has a poor R^2 of 0.28. Removing the March 6, 2012 and February 13, 2013 data points yields a slightly better R^2 of 0.37. Thus, as indicated by the dashed line for the soil gas probe 2 and 4 regressions, any prediction regarding future soil gas monitoring results would be highly speculative.

Although PH₃ was detected (0.06 ppm and 0.16 ppm) during the November 8, 2012 perimeter surface scan monitoring at Pond 18A, PH₃ was not detected during subsequent perimeter surface scans during December 2012 and February through April 2013 (as described above, the January 2013 perimeter surface scan was not completed due to snow cover throughout the month). As described in detail in the *4Q12 Update Tech Memo*, the 0.06 ppm perimeter surface scan reading was located on the eastern most end of Pond 18A (between soil gas probes 5 and 6). At that

location a maximum concentration of 0.06 ppm was detected immediately above the ground surface (1 to 2 inches above ground surface), but not at greater distance above the ground or in the breathing zone. The 0.16 ppm perimeter surface scan reading was located on the northern side of Pond 18A, between soil gas probes SG-4 and SG-5. The investigation identified an area approximately 6 feet wide by 40 feet long where a maximum concentration of 0.21 ppm was detected at 1 to 2 inches above ground surface, but not at greater distance above the ground or in the breathing zone. The full cap surface scan identified only one location in Cell #2 near soil gas probe 4 with a reading of 0.02 ppm at 1 to 2 inches above ground surface, but not at greater distance above the ground or in the breathing zone.

As summarized in the *4Q12 Update Tech Memo*, the PH3 detections during the Pond 18A perimeter surface scan and cap surface scan monitoring on November 8, 2012 occurred during a low pressure system and accompanying drop in BP that is relatively infrequent (for that magnitude of the BP drop) and short in duration. The maximum PH3 detection during the November 8 perimeter surface scan and follow-up investigation monitoring was 0.21 ppm at 1 to 2 inches above ground surface at the identified, localized, source area; however, PH3 was not detected higher above the ground or in the breathing zone. Considering that the PH3 concentration detected at ground level was below the OSHA 8-hour TWA PEL of 0.3 ppm and no PH3 was detected in the breathing zone, the transient PH3 detection during this strong low pressure event did not represent a threat to workers at Pond 18A or other personnel within the RCRA pond area.

Despite the perimeter surface scan detection during November 2012, the Pond 18A data through April 2013 cannot fully meet the second study objective. However, as described in Section 1.1, EPA has required resumption of gas extraction and treatment at Pond 18A, which FMC initiated on April 18, 2013. That action effectively truncated the assessment study.

6.0 EVALUATION OF MONITORING PROGRAM COMPONENTS

During an EPA-FMC conference call on April 25, 2012 that, in part, included a discussion of EPA comments on the *1Q12 Update Tech Memo*, EPA requested and FMC agreed to develop a framework for long-term phosphine monitoring at the RCRA Ponds that would be the basis for Section 3 of the RCRA Pond amended post-closure plan. As agreed during that conference call, FMC submitted the *Framework* concurrently with the *2Q12 Update Tech Memo*. As stated in the *FMC RTC* to the EPA Draft Comments on the Framework, the responses to certain EPA comments are incorporated into this *Final Update* of the Assessment Study Report. The *FMC RTC* is provided as Attachment A.

6.1 Air Monitoring Program Components

This section provides a summary of the evaluation of air monitoring plan components presented in the *Framework* as updated with monitoring results through April 2013.

Appurtenance Monitoring

Appurtenance monitoring remains the most relevant element of the RCRA Pond PH3 monitoring program. This monitoring focuses on the RCRA Pond appurtenances that have been or could be points of release and potential exposure to maintenance (and other) personnel at the RCRA Ponds. In addition, appurtenance monitoring has been effective in identifying needed maintenance at appurtenances. As stated in FMC's response to EPA Specific Comment 3 of the *EPA Draft Comments*, FMC agrees that performing needed maintenance is a priority. The *Framework* and *Section 3 PCP* include a requirement for performance of maintenance and re-monitoring within 10 days of a triggering monitoring result. The "within 10 days" requirement for maintenance is consistent with C.F.R. Title 40, Part 60, Subpart WWW—Standards of Performance for Municipal Solid Waste Landfills, § 60.755(c)(4).

Cap Perimeter Surface and Cap Surface Scans

Phosphine has not been detected during the pond perimeter surface scans at any of the ponds to date, with the exception of four monitoring events at Pond 15S and one monitoring event at Pond 18A as summarized below.

- During the August 2, 2010 (site-wide assessment) perimeter surface scan at Pond 15S, PH3 was detected at the cap surface at 3 of 88 measurement points. The results were 0.03, 0.07 and 0.51 ppm. Phosphine was not detected during the full cap surface scan triggered by these results. During the initial perimeter surface scan and subsequent full cap scan, PH3 was not detected in ambient air (i.e., no detections on personal IH monitors). At the time of the site wide assessment, gas extraction and treatment had already been initiated at Pond 15S but was not fully operational at both perimeter pipe standpipes until June 2010 (utilizing 2 GES units at each standpipe). During initial efforts to extract from TMPs #1, #2 and #5 and the west perimeter pipe standpipe in the May to June 2010 timeframe, PH3 concentrations beneath the final cap were over 150,000 ppm based on calculated source gas PH3 concentrations at those TMPs and the west perimeter pipe standpipe.
- On November 1, 2011, GES units #3, 4, 5 & 10 connected to the Pond 15S west standpipe were shut down for maintenance to the gas extraction piping leading to the standpipe. The piping was not repairable and the west units were idled until December 8, 2011, when GES units #3, 4, 5 & 10 began extracting from TMP #2 per the Pond 15S Interim Work Plan Addendum A. During the period following disconnection from the west standpipe and start-up extracting from TMP #2, PH3 was detected during the "enhanced" pond perimeter surface scans (per UAO Weekly Report #67) at the northwest corner of Pond 15S on November 16, 21 and 23, 2011. Investigation indicated that shallow soil gas probes or rodent holes were the likely sources. After resealing the soil gas probes and filling rodent holes, the re-monitoring results were 0.00 ppm PH3. No

PH3 was detected during Addendum A or Air Monitoring Plan perimeter surface scans at Pond 15S from November 28, 2012 to date.

- On November 8, 2012, PH3 was detected (0.06 ppm and 0.16 ppm) during the perimeter surface scan monitoring at Pond 18A. The 0.06 ppm perimeter surface scan reading was located on the eastern most end of Pond 18A (between soil gas probes 5 and 6). At that location a maximum concentration of 0.06 ppm was detected immediately above the ground surface (1 to 2 inches above ground surface), but not at greater distance above the ground or in the breathing zone. The 0.16 ppm perimeter surface scan reading was located on the northern side of Pond 18A, between soil gas probes SG-4 and SG-5. The investigation identified an area approximately 6 feet wide by 40 feet long where a maximum concentration of 0.21 ppm was detected at 1 to 2 inches above ground surface, but again not at greater distance above the ground or in the breathing zone. The full cap surface scan identified only one location in Cell #2 near soil gas probe 4 with a reading of 0.02 ppm at 1 to 2 inches above ground surface. Phosphine again was not detected there at greater distance above the ground or in the breathing zone. The re-monitoring perimeter surface scan was conducted at Pond 18A on November 14, 2012 and all readings then were 0.00 ppm.

As described in detailed in the 4Q13 Update Tech memo, the PH3 detections during the Pond 18A perimeter surface scan and cap surface scan monitoring on November 8, 2012 occurred during a low pressure system and accompanying drop in BP that is relatively infrequent (for that magnitude of the BP drop) and short in duration. The maximum PH3 detection during the November 8 perimeter surface scan and follow-up investigation monitoring was 0.21 ppm at 1 to 2 inches above ground surface at the identified source area; however, PH3 was not detected higher above the ground or in the breathing zone. Considering that the PH3 concentration detected at ground level was below the OSHA 8-hour TWA PEL of 0.3 ppm and no PH3 was detected in the breathing zone, the PH3 detected during this strong low pressure event did not represent a threat to workers at Pond 18A or other personnel within the RCRA pond area.

Detection of PH3 during perimeter surface scans occurred at Pond 15S when PH3 concentrations beneath the cap were very high (> 150,000 ppm) or following the unplanned loss of gas extraction and treatment at the west standpipe for about 6 weeks. Detection of PH3 during the November 2012 monitoring event at Pond 18A occurred after the east perimeter pipe PH3 concentration (east standpipe) had reached 9,937 ppm as measured during the October 2012 monitoring event. As noted in the Landfill Gas Primer (ATSDR, 2001), “near surface gas data do not indicate the concentrations of gases that people may be breathing because of the effects of rapid dilution that is normally expected of gases traveling from the surface of the landfill to the 3- to 5-foot height that may be considered the breathing zone for many people.” Because no PH3 was detected in the breathing zone during the surface monitoring events described above,

the PH3 concentrations detected at ground level during the surface scans at Ponds 15S and 18A do not represent a threat to workers at Pond 18A or other personnel within the RCRA pond area.

Low-lying Area Monitoring

The low-lying area monitoring, performed only if triggered by pond perimeter surface scan, pond cap surface scan, appurtenance ambient air monitoring or an IH monitor alarm, was only triggered two times to date.

An IH monitoring alarm with a maximum reading of 1.60 ppm occurred on November 3, 2011 within the northwest standpipe pipe maintenance / removal excavation at Pond 15S. The IH alarm at the 0.3 ppm set-point triggered an investigation of the source and low-lying area monitoring. The source was identified as the south face of the excavation and the adjacent low-lying area was the bottom of the excavation. The IH alarm at the 1.0 ppm alarm set-point also triggered fenceline monitoring. All the fenceline monitoring stations showed 0.00 ppm PH3.

The PH3 detections (0.06 ppm and 0.16 ppm) during the perimeter surface scan monitoring at Pond 18A on November 8, 2012 also triggered low-lying area monitoring. Phosphine was not detected in the adjacent low-lying areas. Although the low-lying area monitoring was intended to be contingent and reactive (not predictive), this monitoring component has not been and is not likely to be relevant in the future.

Contingent Fenceline Monitoring

As described above, the Air Monitoring Plan provision for contingent fenceline monitoring was triggered one time. This was associated with the Pond 15S northwest standpipe pipe maintenance / removal excavation. The provision for fenceline monitoring is contingent and reactive. However, this monitoring is relevant for any future circumstances, should PH3 be detected in ambient air at the breathing zone at a concentration of 1 ppm or higher that could potentially migrate downwind to the facility boundary.

Note that as reported in Pond UAO Weekly Report #91, on Wednesday, May 2, 2012 at 0500 hours a logged maximum reading of 8.60 ppm and a time-weighted average reading of 0.01 ppm were recorded on the continuous monitor located at Pond 15S Station #4. The current reading at that time was 0.00 ppm. Per the Air Monitoring Plan, the maximum reading above 1.0 ppm triggered fenceline monitoring at site 1 through 9. All the fenceline readings were 0.00 ppm PH3. After this event, the Draeger monitor was downloaded and the data was evaluated. The downloaded data did not show any one-minute average readings above 0.00 ppm. The downloaded data did show the monitor going into alarm for Alarm 1 (setpoint 0.30 ppm) and Alarm 2 (setpoint 1.0 ppm) 10 times during a 3-minute period. An internal electronic malfunction in this monitor likely caused the high maximum reading. That monitor was

removed from service. This event was considered a “false” triggering of the contingent fenceline monitoring.

As clarified in FMC’s response to Specific Comment 6 of the *EPA Draft Comments*, the false triggering of fenceline monitoring described above is only for the continuous monitors and is based on an evaluation of the downloaded logged data. FMC has also described “false positive” readings on continuous monitors (again based on downloaded data) in *Evaluation of Logged Non-Zero Maximum Readings using Draeger Pac III Phosphine Monitors at Pond 18A Continuous Monitoring Station 3*, July 8, 2011. As described in that document, the PH₃ monitors are cross-sensitive to internal combustion engine exhaust and can experience sensor drift and electronic malfunctions while deployed in the field under sometimes harsh weather conditions. The Draeger PAC III monitors are also cross-sensitive to H₂S and SO₂ gases that are present at and may be emitted from the neighboring chemical plant. FMC has not asserted that any real time PH₃ monitor reading is “false,” rather FMC has noted that contingent monitoring has been falsely triggered based on downloaded continuously logged data.

6.2 Soil Gas Monitoring

Systematic soil gas monitoring was conducted at Ponds 8E, 15S, 16S, 17 and 18A pursuant to the Interim Work Plans for Gas Extraction and Treatment (Ponds 8E, 15S and 17) and the Phosphine Assessment Study Work Plan (Ponds 16S and 18A). A summary of the results and an evaluation of the results are presented in the *Assessment Study Report* and updated for Ponds 16S and 18A in the *1Q through 4Q12 Update Tech Memos* and this *Final Update*. As stated in the *Assessment Study Report*, during gas extraction (at Ponds 15S, 17 and 18), the monitoring results, including soil gas monitoring, were primarily evaluated to assess the effectiveness of gas extraction toward meeting the RCRA Pond UAO performance objectives. The evaluations of the Pond 16S and 18A soil gas monitoring results are described in Section 5.

In summary, the Pond 16S soil gas results through April 2013 show a visually apparent increasing trend that was also apparent in 4Q12 and is consistent with the statistically significant increasing trend in the data from shallow soil gas probes 5, 11 and 12. The Pond 18A soil gas data through April 2013 also show a visually apparent increasing trend in the data from shallow soil gas probes 2 and 4. However, the best-fit regression through the soil gas data for both ponds yields very poor coefficients of prediction, which limits the utility of the data for predicting future soil gas results. The soil gas PH₃ results for Pond 16S (maximum of 439 ppm at probe 11 on March 6, 2012) and Pond 18A (post-gas extraction maximum of 243 ppm at probe 4 on February 13, 2013) do not correlate to any detection of PH₃ in the breathing zone or ground level (4 to 6 inches AGS) (i.e., PH₃ has not been detected in the breathing zone or ground level during any of the soil gas monitoring events).

The shallow and step-out soil gas monitoring results cannot be used to establish a threshold concentration(s) above which there is a potential or actual release of PH₃ to ambient air. More

importantly, PH₃ concentrations and any trends beneath the final cap can be more directly and reliably monitored at the perimeter pipe standpipes.

In addition, as described above, the shallow soil gas probes at the northwest corner of Pond 15S were identified as conduits for the release of PH₃ that was detected during surface scans following the loss of gas extraction at the west standpipe. The existing shallow and step-out soil probes should be removed and the probe holes filled with hydrated bentonite slurry to eliminate the potential for PH₃ release through the soil gas probes.

As clarified in FMC's response to Specific Comment 8 of the *EPA Draft Comments*, the recommendation to remove the soil gas probes is not a response to the identification of soil gas probes as conduits for release during perimeter surface scans at the northwest corner of Pond 15S. Rather, as described in the *Framework* and summarized above, soil gas monitoring is not effective for predictive monitoring and is not proposed as an element of the long-term monitoring program. As the soil gas probes will not be used in the future, the probes should be removed and filled as a proactive action to prevent the possibility the probes could be conduits for PH₃ release in the future. The recommendation for abandonment of the soil gas probes is similar to abandoning groundwater monitoring wells that are no longer used. This prevents the wells from becoming potential conduits for contaminants to groundwater. Temporary shallow soil gas probes nevertheless may be appropriate in areas where intrusive maintenance work within the limit of final cover may be required in the future, as specified in *Section 3 PCP*.

6.3 Perimeter Pipe and TMP Monitoring

Perimeter pipe (standpipe) and TMP monitoring are the most direct and reliable method to assess the PH₃ concentration and any trends beneath the final caps at the RCRA ponds. Because the perimeter gas collection pipe system runs around the perimeter, beneath and about 10 feet inside the final cap anchor trench, the perimeter pipe standpipes are more representative of PH₃ concentrations and any trends that may result in migration of gas into fill materials beyond the cap anchor trench and potentially released to ambient air at concentrations that may threaten human health and the environment. The TMP monitoring results represent a relatively small zone around the bottom of the TMPs (refer to the *2Q12 Update Tech Memo*). While the average of TMP results is useful for estimating the total mass of PH₃ beneath the cap, individual TMP results are not predictive of the potential for PH₃ migration beyond the cap anchor trench.

As stated in FMC's response to Specific Comment 9 of the *EPA Draft Comments*, FMC has never taken a position that perimeter pipe concentrations are representative of the level throughout the pond, beyond a very simplistic correlation that higher perimeter pipe concentrations are associated with higher pond concentrations as measured in TMPs when one pond is compared to another. Rather, perimeter pipe concentrations are generally representative of the concentration of phosphine proximal to the subsurface gap between the pond liner anchor trench and the final cap anchor trench, which potentially allows for lateral migration of PH₃ into

the cap drainage piping and / or conduit (for the temperature / pressure monitoring control wires). These represent potential preferential pathways for migration / accumulation outside the final cap anchor trench.

Perimeter pipe monitoring, in conjunction with appurtenance monitoring (e.g., inside and leak detection monitoring at TMP enclosures, cap drainage lift stations and cap drainage lift station instrument panels, temperature / pressure monitoring panels, and LCDRS manholes), provides appropriate spatial coverage to detect any potential PH₃ concentration trends and potential release(s) at points outside the final cap (e.g., at the base of TMPs). The primary goal of the long-term monitoring is to predict and prevent any release of PH₃ to ambient air. However, that goal is less likely to be achieved so long as other post-closure monitoring systems, specifically TMPs, cap drainage monitoring piping and associated lift stations / instrument panels, provide preferential pathways or conduits for migration of PH₃ and potential exposure to post-closure monitoring and maintenance personnel. The monitoring program and trigger levels presented in *Section 3 PCP* were developed to detect potential or actual releases of PH₃ at levels that will trigger corrective maintenance, additional monitoring and/or gas extraction before PH₃ releases reach levels that could threaten human health and the environment.

7.0 LONG-TERM GAS MONITORING PROGRAM

The RCRA Pond gas monitoring program presented in *Section 3 PCP* incorporates the revisions identified in the *FMC RTC*. This section presents clarifications and additional information relevant to the long-term monitoring program pursuant to FMC's response to General Comments 1 and 2 of the *EPA Draft Comments* and Comment 2 of the Idaho Department of Health and Welfare Comments on the Framework (attached to the *EPA Draft Comments*). The text and inset table below are also incorporated into Section 3.1 (RCRA Pond Gas Monitoring Program Objectives) of *Section 3 PCP*.

The overall objective of the RCRA Pond gas monitoring program is the effective and timely detection of gas concentrations within the closed units and appurtenant post-closure systems at levels that require maintenance action, additional monitoring, and/or initiation of gas extraction and treatment to control, minimize, or eliminate post-closure escape of hazardous constituents to the atmosphere to the extent necessary to protect human health and the environment. A coequal objective is the effective and timely detection of gas concentrations within the closed units and appurtenant post-closure systems at levels that require maintenance action, additional monitoring, and/or initiation of gas extraction and treatment to protect and preserve the closure cover and post-closure monitoring systems ("post-closure infrastructure").

In order to protect post-closure monitoring and maintenance (and other) personnel within the RCRA Ponds area, the OSHA Permissible Exposure Limits (PELs) for phosphine (PH₃) were used to guide development of the gas monitoring program and the trigger levels for corrective maintenance, additional monitoring, and initiation of gas extraction and treatment.

Summary of Phosphine Exposure Limits	
Permissible Exposure Limit (PEL)	0.3 ppm
Short-Term Exposure Limit (STEL)	1.0 ppm
Immediately Dangerous to Life or Health (IDLH)	50 ppm

In the EPA clarification to General Comments 1 of the *EPA Draft Comments*, EPA specified the “critical” post-closure infrastructure as: (1) final cap (e.g., FML/GCL components), (2) gas collection piping including connections and standpipes, and (3) ET cap drainage systems including lift stations, (4) pond liner and (5) LCDRS systems.

As stated in FMC’s response this comment and clarification, with respect to protection of the final cap (item No. 1) geosynthetic components (HDPE and GCL) and pond liners (either PVC or HDPE), the RCRA Closure Plans for each pond included information that evaluated and found HDPE and PVC were both compatible for the liners at the RCRA Ponds. HDPE was selected for the final cover FML layer due to its higher strength and superior seaming capabilities compared to PVC. Although the Closure Plans did not specifically include information on the compatibility of PVC pipe, 30 mil PVC liner (item No. 4) was tested and found to be compatibility and, by extension, HDPE and PVC pipe would be compatible for use at the RCRA Ponds. The perimeter gas collection piping (item No. 2) is PVC, ET cap drainage system pipe (item No. 3) is HDPE, and LCDRS (item No. 5) piping from the collection system to the manholes is HDPE. In an August 20, 2012 email, FMC forwarded to EPA the Closure Plan compatibility information (Section 7.2.4 excerpt and Appendix N from the Pond 15S Closure Plan) and a Chart of PVC Chemical Resistance that confirms PVC is compatible with (“good” resistance to) phosphine, phosphorus pentoxide and phosphoric acid. Based on prior compatibility evaluations, the presence of phosphine beneath the cap will not adversely affect “critical infrastructure.” The Pond 15S cap HDPE liner layer and perimeter gas collection pipe have likely been in contact with PH₃ concentrations as high as 170,000 ppm in the Pond 15S perimeter pipe system as calculated for the source gas extracted from the former west standpipe in May 2010. The cap geosynthetic layers (geotextile, geonet, HDPE liner and GCL) and perimeter gas collection pipe compatibility with PH₃ was confirmed as evidenced by the observed excellent condition of these materials during the August/September 2012 installation of the new connection to the perimeter piping and outlet at the west end of Pond 15S.

In order to protect and preserve the closure cover and post-closure monitoring systems (“post-closure infrastructure”), the Lower Explosive Limit (LEL) for PH₃ of approximately 20,000 ppm was used to develop the gas monitoring program and specifically the trigger for initiation of gas extraction and treatment. After reviewing the propagated relative error for the calculation of

source gas concentrations when using a gas extraction system (GES) unit for routine perimeter pipe monitoring and/or gas extraction and treatment, the propagated relative error is 15% (rounded up from 12.5%). As an added margin of safety, the propagated relative error was “doubled” to arrive at the recommended 14,000 ppm PH₃ (70 percent of the LEL) for the perimeter pipe concentration that will trigger gas extraction and treatment. This triggering perimeter pipe PH₃ concentration also conforms with FMC’s position that extraction and treatment of source gas below the LEL is inherently safer for the GES unit operators.

In summary, the *Section 3 PCP* monitoring program and triggers for increased monitoring frequency, maintenance, additional monitoring elements and/or gas extraction and treatment do not rely on (1) any assumed distribution of PH₃ beneath the final cap or (2) on a defined relationship between monitoring points (e.g., ratio of TMP to perimeter pipe concentrations, ratio of perimeter pipe to soil gas concentrations). As stated above, the monitoring focuses on (1) monitoring appurtenances that have been or could be points of release and sets action triggers based on OSHA PELs that are protective of maintenance (and other) personnel within the RCRA Ponds and (2) monitoring perimeter pipe concentrations to track the PH₃ concentration and any trends, and, (3) commencing gas extraction and treatment when/if the perimeter pipe PH₃ concentration (as measured at the highest concentration standpipe at ponds with multiple standpipes) reaches 70-percent of the LEL (14,000 ppm) to prevent potential damage to the gas collection piping system and other post-closure infrastructure.

REFERENCES

- ATSDR, 2001. Landfill Gas Primer - An Overview for Environmental Health Professionals. Agency for Toxic Substances and Disease Registry. November 2001.
- EPA, 2010. "RCRA Pond Unilateral Administrative Order for Removal Actions," EPA Region 10, June 2010.
- EPA, 2012. EPA Draft Comments on FMC's July 16, 2012, *Framework for Post-Closure Phosphine Monitoring RCRA Ponds, FMC Facility, Pocatello, ID*. Emailed to FMC on September 07, 2012.
- FMC, 2012a. FMC's responses to EPA's *Draft Comments on FMC's July 16, 2012, Framework for Post-Closure Phosphine Monitoring - RCRA Ponds, FMC Facility, Pocatello, ID* ("EPA Draft Comments," EPA, 2012), as clarified during an EPA-FMC conference call on September 14, 2012. October 16, 2012.
- FMC, 2012b. Section 3 RCRA Pond Gas Monitoring Program, Appendix A-4 RCRA Pond Quality Assurance Project Plan for Gas Monitoring, and Appendix A-5 Field Sampling Plan for RCRA Pond Gas Monitoring for the amended RCRA Pond Post-Closure Plan. Transmitted to EPA electronically on December 14, 2012.
- MWH, 2011. "RCRA Pond UAO – SOW Task 1 – Air Monitoring Plan – Part I and Part II." January 2011.
- MWH, 2011b. "RCRA Pond Phosphine Assessment Study Work Plan - Final." November 2010, Revised July 2011.
- MWH, 2012a. "RCRA Pond Phosphine Assessment Study Report." January 2012.
- MWH, 2012b. "Technical Memorandum - First Quarter 2012 Update for Ponds 16S and 18A - RCRA Pond Phosphine Assessment Study." April 11, 2012.
- MWH, 2012c. "Technical Memorandum - Second Quarter 2012 Update for Ponds 16S and 18A - RCRA Pond Phosphine Assessment Study." July 16, 2012.
- MWH, 2012d. "Framework for Post-Closure Phosphine Monitoring, RCRA Ponds, FMC Facility, Pocatello, ID." July 16, 2012.
- MWH, 2012e. "Technical Memorandum - Third Quarter 2012 Update for Ponds 16S and 18A - RCRA Pond Phosphine Assessment Study." October 16, 2012.
- MWH, 2013. "Technical Memorandum - Fourth Quarter 2012 Update for Ponds 16S and 18A - RCRA Pond Phosphine Assessment Study." January 25, 2013.

Table 3.3a Ponds 8S, 8E, 9E, 17 and Phase IV Ponds Perimeter Surface Scan Monitoring Results Summary

Date	Pond 8E		Pond 9E		Pond 8S		Phase IV		Pond 17		Comment
	Breathing zone	Detection	Breathing zone	Detection	Breathing zone	Detection	Breathing zone	Detection	Breathing zone	Detection	
July/August - 10	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	
October-10	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	
November-10	0.00	No	NS		NS		NS		0.00	No	
December-10	NW		NS		NS		NS		0.00	No	8E perimeter was snow covered for the month.
January-11	NW		NS		NS		NS		NW		8E and 17 were snow covered for the month.
February-11	NW		NS		NS		NS		0.00	No	8E perimeter was snow covered for the month.
March-11	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	
April-11	0.00	No	NS		NS		NS		0.00	No	
May-11	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	
June-11	0.00	No	NS		NS		NS		0.00	No	
July-11	0.00	No	NS		NS		NS		0.00	No	
August-11	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	
September-11	0.00	No	NS		NS		NS		0.00	No	
October-11	NS		NS		NS		NS		NS		
November-11	0.00	No	NS		NS		NS		0.00	No	
December-11	NS		NS		NS		NS		NS		
January-12	NS		NS		NS		NS		NS		
February-12	0.00	No	NS		NS		NS		0.00	No	
March-12	NS		NS		NS		NS		NS		
April-12	NS		NS		NS		NS		NS		
May-12	0.00	No	NS		NS		NS		0.00	No	
June-12	NS		NS		NS		NS		NS		
July-12	NS		NS		NS		NS		NS		
August-12	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	
September-12	NS		NS		NS		NS		NS		
October-12	NS		NS		NS		NS		NS		
November-12	NS		NS		NS		NS		NS		
December-12	NS		NS		NS		NS		NS		
January-13	NS		NS		NS		NS		NS		
February-13	NS		NS		NS		NS		NS		
March-13	NS		NS		NS		NS		NS		
April-13	NS		NS		NS		NS		NS		

Notes

NS = not surveyed per monitoring schedule in Air Monitoring Plan.

NW = not completed due to weather / snow cover conditions.

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.3b Ponds 16S and 18A Perimeter Surface Scan Monitoring Results Summary

Date	Pond 16S		Pond 18A		Comment
	Breathing zone	Detection	Breathing zone	Detection	
July/August - 10	NS		0.00	No	
October-10	0.00	No	0.00	No	
November-10	NS		0.00	No	
December-10	NS		0.00	No	
January-11	NS		NW		18A was snow covered for the month.
February-11	0.00	No	0.00	No	
March-11	NS		0.00	No	
April-11	NS		0.00	No	
May-11	0.00	No	0.00	No	
June-11	NS		0.00	No	
July-11	NS		0.00	No	
August-11	0.00	No	0.00	No	
September-11	NS		0.00	No	
October-11	NS		0.00	No	Pond 18A enhanced monitoring (10/10/11).
			0.00	No	Pond 18A enhanced monitoring (10/25/11).
November-11	NS		0.00	No	Pond 18A (11/8/11).
			0.00	No	Pond 18A (11/21/11).
December-11	NS		NW		18A was snow covered for the month.
January-12	NS		0.00	No	
February-12	NS		NS		
March-12	0.00	No	0.00	No	
April-12	0.00	No	NS		
May-12	0.00	No	0.00	No	
June-12	0.00	No	0.00	No	
July-12	0.00	No	0.00	No	
August-12	0.00	No	0.00	No	
September-12	0.00	No	0.00	No	
October-12	0.00	No	0.00	No	
November-12	0.00	No	0.00	Yes	Pond 18A perimeter surface scan on 11/8/12 detectd PH3 > 0.05 ppm at 2 locations, performed low lying area investigation and full surface scan on 18A, no detection above 0.05 ppm found.
	NS		0.00	No	Performed 18A perimeter surface re-monitoring on 11/14/12 and there were no PH3 detections.
December-12	0.00	No	0.00	No	
January-13	NW		NW		16S and 18A were snow covered for the month.
February-13	0.00	No	0.00	No	
March-13	0.00	No	0.00	No	
April-13	0.00	No	0.00	No	

Notes

NS = not surveyed per monitoring schedule in Air Monitoring Plan.

NW = not completed due to weather / snow cover conditions.

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.4 Pond 8S Appurtenance Monitoring Results Summary

	TMP Enclosure															
	T-01				T-02				T-03				T-04			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/26/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/27/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/14/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Cap Drainage Lift Station											
	LS-01						LS-02					
	Ambient Air		Leak Detection				Ambient Air		Leak Detection			
Date	Ambient	BZ	Base	Lid	VP	OF	Ambient	BZ	Base	Lid	VP	OF
7/28/10	0.00	0.00	NS	0.00	NS	NS	0.00	0.00	NS	0.00	NS	NS
10/27/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/14/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Instrumentation Panel															
	Temperature & Pressure				Alarm				LS-01				LS-02			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Door	Conduit	Ambient	BZ	Door	Conduit	Ambient	BZ	Door	Conduit	Ambient	BZ	Door	Conduit
July-10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/27/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/14/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Perimeter Gas Collection Pipe Riser or Pressure Monitor					
	Ambient Air		Leak Detection		
Date	Ambient	BZ	Base	Outlet	TJ
July-10	NS	NS	NS	NS	NS
10/27/10	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00
8/19/11	0.00	0.00	0.00	0.00	0.00
8/14/12	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Table 3.5 Pond 9E Appurtenance Monitoring Results Summary

	TMP Enclosure															
	T-01				T-02				T-03				T-04			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/10/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/10/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/24/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/15/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	TMP Enclosure															
	T-06				T-07				T-08				T-09			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/27/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/26/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/24/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/15/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	LCDRS Sump 1				LCDRS Sump 2				LCDRS Sump 3			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	NS	0.00	0.00	0.00	NS	0.00	0.00	0.00	NS	0.00
10/26/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/24/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/15/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	LCDRS Sump 4				LCDRS Sump 5				LCDRS Sump 6			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	NS	0.00	0.00	0.00	NS	0.00	0.00	0.00	NS	0.00
10/26/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/24/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.02	0.02	0.02	0.00	0.02	0.02	0.00	0.00	0.00	0.00
8/15/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Instrumentation Panel							
	Temperature & Pressure				Alarm			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Door	Conduit	Ambient	BZ	Door	Conduit
7/10/10	NS	NS	NS	NS	NS	NS	NS	NS
10/26/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/24/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/15/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Perimeter Gas Collection Pipe Riser or Pressure Monitor				
	Ambient Air		Leak Detection		
	Ambient	BZ	Base	Outlet	TJ
July-10	NS	NS	NS	NS	NS
10/26/10	0.00	0.00	0.00	0.00	0.00
2/24/11	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00
8/15/12	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Door, Conduit, Outlet, and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Table 3.6 Phase IV Ponds Appurtenance Monitoring Results Summary

	TMP Enclosure											
	T-01				T-02				T-03			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	TMP Enclosure											
	T-05				T-06				T-07			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	TMP Enclosure											
	T-08				T-09				T-10			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	TMP Enclosure							
	T-12				T-13			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Table 3.6 Phase IV Ponds Appurtenance Monitoring Results Summary

	Cap Drainage Lift Station											
	LS-01						LS-02					
	Ambient Air		Leak Detection				Ambient Air		Leak Detection			
Date	Ambient	BZ	Base	Lid	VP	OF	Ambient	BZ	Base	Lid	VP	OF
7/28/10	0.00	0.00	NS	0.00	NS	NS	0.00	0.00	NS	0.00	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Cap Drainage Lift Station											
	LS-03						LS-04					
	Ambient Air		Leak Detection				Ambient Air		Leak Detection			
Date	Ambient	BZ	Base	Lid	VP	OF	Ambient	BZ	Base	Lid	VP	OF
7/28/10	0.00	0.00	NS	0.00	NS	NS	0.00	0.00	NS	0.00	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Instrumentation Panel																			
	Temperature & Pressure				LS-01				LS-02				LS-03				LS-04			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambinet	BZ	Door	Conduit	Ambinet	BZ	Door	Conduit	Ambinet	BZ	Door	Conduit	Ambinet	BZ	Door	Conduit	Ambinet	BZ	Door	Conduit
July-10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Perimeter Gas Collection Pipe Riser or Pressure monitor																				
	Pond 11					Pond 12					Pond 13					Pond 14				
	Ambient Air		Leak Detection			Ambient Air		Leak Detection			Ambient Air		Leak Detection			Ambient Air		Leak Detection		
Date	Ambient	BZ	Base	Outlet	TJ	Ambient	BZ	Base	Outlet	TJ	Ambient	BZ	Base	Outlet	TJ	Ambient	BZ	Base	Outlet	TJ
July-10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Table 3.7 Pond 8E Appurtenance Monitoring Results Summary

TMP Enclosure																
	T-01				T-02				T-03				T-04			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/13/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/11/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/15/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/14/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/14/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/22/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

LCDRS Sump				
	Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	NS	0.00
10/25/10	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00
1/18/11	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00
3/14/11	0.00	0.00	0.00	0.00
4/18/11	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00
6/13/11	0.00	0.00	0.00	0.00
7/11/11	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00
2/15/12	0.00	0.00	0.00	0.00
5/14/12	0.00	0.00	0.00	0.00
8/14/12	0.00	0.00	0.00	0.00
3/22/13	0.00	0.00	0.00	0.00

Instrumentation Panel				
	Ambient Air		Leak Detection	
Date	Ambient	BZ	Door	Conduit
7/28/10	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00
1/18/11	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00
3/14/11	0.00	0.00	0.00	0.00
4/18/11	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00
6/13/11	0.00	0.00	0.00	0.00
7/11/11	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00
2/15/12	0.00	0.00	0.00	0.00
5/14/12	0.00	0.00	0.00	0.00
8/14/12	0.00	0.00	0.00	0.00
3/22/13	0.00	0.00	0.00	0.00

Perimeter Gas Collection Pipe Riser or Pressure Monitor					
	Ambient Air		Leak Detection		
Date	Ambient	BZ	Base	Outlet	TJ
7/28/10	NS	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00
1/18/11	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00
3/14/11	0.00	0.00	0.00	0.00	0.00
4/18/11	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00
6/13/11	0.00	0.00	0.00	0.00	0.00
7/11/11	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00	0.00
2/15/12	0.00	0.00	0.00	0.00	0.00
5/14/12	0.00	0.00	0.00	0.00	0.00
8/14/12	0.00	0.00	0.00	0.00	0.00
3/22/13	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Door, Conduit, Outlet, and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

**Table 3.9a Ponds 8S, 8E, 9E and Phase IV ponds
Perimeter Pipe Monitoring Results Summary**

Pond	Date	BZ	Source
8S	7/26/2010	0.00	978
	5/18/2011	0.00	1,043
	8/18/2011	0.00	715
8E	7/29/2010	0.00	1,800
	10/26/2010	0.00	635
	11/18/2010	0.00	823
	12/15/2010	0.00	407
	1/17/2011	0.00	900
	2/22/2011	0.00	655
	3/16/2011	0.00	817
	4/13/2011	0.00	862
	5/12/2011	0.00	724
	5/15/2011	0.00	972
	7/13/2011	0.00	695
	8/16/2011	0.00	480
	9/13/2011	0.00	434
	3/22/2013	0.00	712
9E	7/27/2010	0.00	0.00
	5/23/2011	0.00	0.00
	8/17/2011	0.00	0.00
Phase IV ponds			
11S	7/29/2010	0.00	15.67
	5/18/11	0.00	30
	8/16/2011	0.00	29
12S	7/29/2010	0.00	732
	5/19/2011	0.00	1,479
	8/16/2011	0.00	965
13S	7/27/2010	0.00	0.06
	5/19/2011	0.00	0.17
	8/17/2011	0.00	0.03
14S	7/27/2010	0.00	0.00
	5/23/2011	0.00	0.00
	8/17/2011	0.00	0.01

Note:

Pond Perimeter Collection Pipe Breathing Zone (BZ) and Source Concentration.

Table 3.9b Ponds 16S and 18A Perimeter Pipe Monitoring Results Summary

Month	Pond 16S												Pond 18 Cell A					
	West Standpipe			South Standpipe			East Standpipe			North Standpipe			South Standpipe			East Standpipe		
	Date	BZ	Source	Date	BZ	Source	Date	BZ	Source	Date	BZ	Source	Date	BZ	Source	Date	BZ	Source
July/August-10	-	-	-	-	-	-	-	-	-	-	-	-	7/22	0.00	7,123	-	-	-
October-10	-	-	-	10/21	0.00	0.00	-	-	-	-	-	-	-	-	NS	-	-	-
November-10	-	-	-	11/30	0.00	0.00	-	-	-	-	-	-	-	-	NS	-	-	-
December-10	-	-	-	12/16	0.00	0.00	-	-	-	-	-	-	12/15	0.00	3,464	-	-	-
January-11	-	-	-	1/13	0.00	34	-	-	-	-	-	-	1/20	0.00	3,467	1/17	0.00	19,155
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1/20	0.00	17,880
February-11	2/15	0.00	43	2/2	0.00	0.99	2/23	0.00	1.07	2/23	0.00	241	2/22	0.00	3,798	2/22	0.00	19,625
March-11	3/2	0.00	3.58	3/2	0.00	28	3/2	0.00	14	3/2	0.00	202	3/3	0.00	2,833	-	-	-
	3/17	0.00	2.07	3/17	0.00	8.78	3/17	0.00	3.12	3/16	0.00	335	3/17	0.00	3,511	-	-	15,187
April-11	4/12	0.00	0.46	4/11	0.00	21	4/11	0.00	34	4/12	0.00	269	4/12	0.00	7,187	-	-	-
	4/27	0.00	0.26	4/26	0.00	15	4/26	0.00	37	4/27	0.00	165	4/26	0.00	4,327	-	-	18,637
May-11	5/11	0.00	0.00	5/11	0.00	0.21	5/11	0.00	60	5/11	0.00	284	5/12	0.00	2,772	-	-	-
	5/24	0.00	1.90	5/23	0.00	459	5/24	0.00	138	5/24	0.00	523	5/25	0.00	3,453	-	-	19,270
June-11	6/6	0.00	117	6/7	0.00	92	6/6	0.00	229	6/6	0.00	770	6/7	0.00	3,740	-	-	-
	6/21	0.00	0.07	6/20	0.00	8.34	6/20	0.00	138	6/20	0.00	610	6/21	0.00	4,043	-	-	18,956
July-11	7/6	0.00	0.08	7/5	0.00	11	7/5	0.00	125	7/5	0.00	383	7/6	0.00	2,892	-	-	-
	7/26	0.00	8.08	7/25	0.00	204	7/25	0.00	289	7/25	0.00	623	7/26	0.00	4,182	-	-	15,410
August-11	8/8	0.00	0.74	8/8	0.00	52	8/8	0.00	470	8/8	0.00	1,382	8/9	0.00	2,798	-	-	-
	8/22	0.00	0.06	8/23	0.00	76	8/22	0.00	231	8/22	0.00	983	8/23	0.00	2,716	-	-	11,801
September-11	9/6	0.00	0.04	9/7	0.00	0.06	9/6	0.00	160	9/6	0.00	362	9/7	0.00	2,168	-	-	-
	9/19	0.00	0.43	9/19	0.00	173	9/19	0.00	199	9/19	0.00	476	9/19	0.00	1,579	-	-	8,253
October-11	10/3	0.00	0.34	10/4	0.00	658	10/3	0.00	668	10/3	0.00	1,297	10/4	0.00	1,780	10/10	0.00	3,505
	10/24	0.00	51	10/25	0.00	2.41	10/24	0.00	593	10/24	0.00	825	-	-	-	10/25	0.00	1,707
November-11	11/7	0.00	0.07	11/8	0.00	0.03	11/7	0.00	161	11/7	0.00	369	-	-	-	11/8	0.00	1,136
	11/21	0.00	0.03	11/21	0.00	1.65	11/21	0.00	219	11/21	0.00	453	11/22	0.00	309	11/22	0.00	1,137
December-11	12/6	0.00	0.07	12/5	0.00	20	12/5	0.00	249	12/5	0.00	281	12/6	0.00	461	12/6	0.00	1,240
	12/19	0.00	33	12/19	0.00	50	12/19	0.00	503	12/19	0.00	915	12/20	0.00	548	12/20	0.00	2,503
January-12	1/4	0.00	2.96	1/4	0.00	21	1/4	0.00	291	1/3	0.00	718	1/3	0.00	515	1/3	0.00	1,795
February-12	2/9	0.00	0.16	2/9	0.00	5	2/8	0.00	500	2/8	0.00	1,186	2/6	0.00	663	2/8	0.00	2,090
March-12	3/5	0.00	238	3/5	0.00	737	3/5	0.00	1,319	3/5	0.00	1,732	3/6	0.00	807	3/6	0.00	3,491
	3/21	0.00	5	3/21	0.00	15	3/21	0.00	1,264	3/21	0.00	1,996	3/22	0.00	900	3/22	0.00	3,788
April-12	4/3	0.00	15.67	4/3	0.00	98	4/3	0.00	1,458	4/3	0.00	3,319	4/4	0.00	880	4/4	0.00	5,094
May-12	5/7	0.00	21	5/7	0.00	12	5/7	0.00	1,464	5/7	0.00	3,672	5/8	0.00	874	5/8	0.00	3,747
June-12	6/11	0.00	0.67	6/11	0.00	22	6/11	0.00	886	6/11	0.00	2,166	6/5	0.00	1,354	6/5	0.00	4,338
July-12	7/9	0.00	8.12	7/9	0.00	70	7/9	0.00	2,057	7/9	0.00	5,214	7/5	0.00	981	7/5	0.00	3,386
August-12	8/2	0.00	18.00	8/2	0.00	134	8/2	0.00	3,540	8/2	0.00	6,729	8/2	0.00	1,253	8/2	0.00	5,717
September-12	9/17	0.00	43	9/17	0.00	160	9/17	0.00	1,948	9/17	0.00	3,922	9/18	0.00	1,248	9/18	0.00	5,968
October-12	10/9	0.00	104	10/9	0.00	309	10/9	0.00	2,291	10/9	0.00	4,576	10/8	0.00	2,122	10/8	0.00	9,937
November-12	11/6	0.00	76	11/6	0.00	67	11/6	0.00	2,540	11/6	0.00	5,915	11/5	0.00	1,205	11/5	0.00	5,571
December-12	12/4	0.00	1.00	12/4	0.00	39	12/4	0.00	1,507	12/4	0.00	3,763	12/3	0.00	691	12/3	0.00	3,184
January-13	1/8	0.00	57	1/8	0.00	279	1/8	0.00	2,758	1/8	0.00	5,038	1/7	0.00	1,465	1/7	0.00	6,128
February-13	2/12	0.00	26	2/12	0.00	107	2/12	0.00	1,792	2/12	0.00	3,072	2/13	0.00	2,240	2/13	0.00	6,693
March-13	3/19	0.00	132	3/19	0.00	104	3/19	0.00	2,154	3/19	0.00	3,636	3/18	0.00	1,968	3/18	0.00	9,059
April-13	4/16	0.00	110	4/16	0.00	132	4/16	0.00	5,253	4/16	0.00	12,609	4/15	0.00	2,445	4/15	0.00	12,710

Notes:

Pond Perimeter Collection Pipe Breathing Zone (BZ) and Source Concentration.

Pond 18A east standpipe concentrations are average concentration from GES units for March through September 2011.

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.9c Pond 17 Perimeter Pipe Monitoring Results Summary

Month	Pond 17											
	NE Standpipe			SE Standpipe			SW Standpipe			NW Standpipe		
	Date	BZ	Source	Date	BZ	Source	Date	BZ	Source	Date	BZ	Source
July/August-10	-	-	-	-	-	-	8/5	0.00	18,007	-	-	-
October-10	-	-	3,329	-	-	9,523	-	-	18,939	-	-	16,620
November-10	-	-	584	-	-	1,942	-	-	11,952	-	-	9,854
December-10	-	-	87	-	-	399	-	-	6,234	-	-	2,538
January-11	-	-	25	-	-	30	-	-	251	-	-	23
	-	-	-	-	-	-	1/25	0.00	22 ⁽¹⁾	-	-	-
February-11	-	-	-	-	-	-	2/14	0.00	8.82 ⁽¹⁾	2/14	-	5.26
March-11	3/15	0.00	0.11	3/16	0.00	6.80	3/10	0.00	2.92 ⁽¹⁾	3/15	0.00	0.80
April-11	4/11	0.00	0.07	4/7	0.00	6.23	4/7	0.00	9.72 ⁽¹⁾	4/11	0.00	0.55
May-11	5/18	0.00	0.96	5/17	0.00	2.23	5/12	0.00	5.33 ⁽¹⁾	5/17	0.00	1.85
June-11	6/14	0.00	0.29	6/14	0.00	1.51	6/15	0.00	3.41 ⁽¹⁾	6/15	0.00	1.55
July-11	7/12	0.00	1.11	7/12	0.00	1.85	7/13	0.00	9.85 ⁽¹⁾	7/13	0.00	0.33
August-11	8/11	0.00	0.11	8/11	0.00	0.45	8/11	0.00	6.62 ⁽¹⁾	8/11	0.00	0.64
September-11	9/12	0.00	0.12	9/12	0.00	0.62	9/14	0.00	7.42 ⁽¹⁾	9/13	0.00	0.71
October-11	10/6	0.00	0.30	10/11	0.00	0.28	10/12	0.00	3.80 ⁽¹⁾	10/11	0.00	0.93
November-11	11/15	0.00	0.00	11/15	0.00	0.50	11/15	0.00	3.37 ⁽¹⁾	11/15	0.00	0.08
December-11	12/13	0.00	0.00	12/13	0.00	2.32	12/14	0.00	2.81 ⁽¹⁾	12/13	0.00	0.57
March-13	3/22	0.00	23	3/22	0.00	147	3/21	0.00	815	3/22	0.00	517

Notes:

Pond Perimeter Collection Pipe Breathing Zone (BZ) and Source Concentration.

Pond 17 concentrations are average concentration from GES units for October to January 2010 period except for Demonstration Period results as noted.

1) Performance Objective Demonstration Result using dilution box.

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.10 Pond 16S Appurtenance Monitoring Results Summary

TMP Enclosure														
Date	T-01							T-02						
	Ambient Air		Leak Detection				Inside	Ambient Air		Leak Detection				Inside
	Ambient	BZ	Base	Lid	PO	PP		Ambient	BZ	Base	Lid	PO	PP	
July-10	NS	NS	NS	NS	-	-	-	NS	NS	NS	NS	-	-	-
10/26/10	0.00	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	0.00	-	-
2/8/11	0.00	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	0.00	-	-
5/17/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
4/4/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
5/7/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
6/11/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
7/10/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
8/3/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
9/17/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
10/9/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
11/6/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/4/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/8/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/12/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/19/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/16/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TMP Enclosure														
Date	T-03							T-04						
	Ambient Air		Leak Detection				Inside	Ambient Air		Leak Detection				Inside
	Ambient	BZ	Base	Lid	PO	PP		Ambient	BZ	Base	Lid	PO	PP	
July-10	NS	NS	NS	NS	-	-	-	NS	NS	NS	NS	-	-	-
10/26/10	0.00	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	0.00	-	-
2/8/11	0.00	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	0.00	-	-
5/17/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
4/4/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
5/7/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
6/11/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
7/10/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
8/3/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
9/17/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
10/9/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	2.62
10/12/12	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	-	0.00
11/6/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.46	0.00	17
11/7/12	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/4/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/8/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/12/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/19/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/16/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Flange loose at T-04
Re-check after maintenance
Flange loose/seal gasket T-04
Re-check after maintenance

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Pipe Ports [PP], Inside, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.10 Pond 16S Appurtenance Monitoring Results Summary

TMP Enclosure														
Date	T-05							T-06						
	Ambient Air		Leak Detection				Inside	Ambient Air		Leak Detection				Inside
	Ambient	BZ	Base	Lid	PO	PP		Ambient	BZ	Base	Lid	PO	PP	
July-10	NS	NS	NS	NS	-	-	-	NS	NS	NS	NS	-	-	-
10/26/10	0.00	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	0.00	-	-
2/8/11	0.00	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	0.00	-	-
5/17/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
4/4/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
5/7/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
6/11/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
7/10/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
8/3/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
9/17/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.03
10/9/12	0.00	0.00	0.02	0.00	0.00	-	0.30	0.00	0.00	0.00	0.00	0.00	-	0.00
10/12/12	0.00	0.00	0.00	0.00	0.00	-	0.00	-	-	-	-	-	-	-
11/6/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
11/7/12	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/4/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/8/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/12/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/19/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/16/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Flange loose at T-05
Re-check after maintenance
Flange loose at T-06
Re-check after maintenance

TMP Enclosure														
Date	T-07							T-08						
	Ambient Air		Leak Detection				Inside	Ambient Air		Leak Detection				Inside
	Ambient	BZ	Base	Lid	PO	PP		Ambient	BZ	Base	Lid	PO	PP	
July-10	NS	NS	NS	NS	-	-	-	NS	NS	NS	NS	-	-	-
10/26/10	0.00	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	0.00	-	-
2/8/11	0.00	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	0.00	-	-
5/17/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
4/4/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
5/7/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
6/11/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
7/10/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
8/3/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
9/17/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
10/9/12	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.33
10/12/12	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	-	0.00
11/6/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/4/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/8/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/12/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/19/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/16/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Flange loose at T-08
Re-check after maintenance

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Pipe Ports [PP], Inside, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.10 Pond 16S Appurtenance Monitoring Results Summary

Date	LCDRS Sump 1 (east)					LCDRS Sump 2 (west)				
	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside
	Ambient	BZ	Base	Lid		Ambient	BZ	Base	Lid	
July-10	NS	NS	NS	NS	-	NS	NS	NS	NS	-
10/26/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
2/8/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
4/4/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/7/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/11/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
7/10/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.89
7/10/12										0.43
8/3/12	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00
9/17/12	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.05
10/9/12	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00
11/6/12	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00
12/4/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/8/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/12/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/19/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/16/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Rechecked inside on afternoon of 7/10/12.

Cap Drainage Lift Station														
Date	LS-01							LS-02						
	Ambient Air		Leak Detection				Inside	Ambient Air		Leak Detection				Inside
	Ambient	BZ	Base	Lid	VP	OF		Ambient	BZ	Base	Lid	VP	OF	
July-10	NS	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	-
10/26/10	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-
2/8/11	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.06
4/4/12	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.04
5/7/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/11/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/10/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/3/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
9/17/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
10/9/12	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.06
11/6/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/4/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/8/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/12/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/19/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/16/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Pipe Ports [PP], Inside, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.10 Pond 16S Appurtenance Monitoring Results Summary

Instrumentation Panel															
Date	Temperature & Pressure					LS-01					LS-02				
	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside
	Ambinet	BZ	Door	Conduit		Ambinet	BZ	Door	Conduit		Ambinet	BZ	Door	Conduit	
July-10	NS	NS	NS	NS	-	NS	NS	NS	NS	-	NS	NS	NS	NS	-
10/26/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
2/8/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/4/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/7/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/11/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/10/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/3/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/17/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/9/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/6/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/4/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/8/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/12/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/19/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/16/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Instrumentation Panel										
Date	LCDRS-01					LCDRS-02				
	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside
	Ambinet	BZ	Door	Conduit		Ambinet	BZ	Door	Conduit	
July-10	NS	NS	NS	NS	-	NS	NS	NS	NS	-
10/26/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
2/8/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/4/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/7/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/11/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/10/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/3/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/17/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/9/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/6/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/4/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/8/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/12/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/19/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/16/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Pipe Ports [PP], Inside, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.10 Pond 16S Appurtenance Monitoring Results Summary

Perimeter Gas Collection Pipe Riser or Pressure monitor																	
Date	North				East					South				West			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection			Ambient Air		Leak Detection		Ambient Air		Leak Detection	
	Ambient	BZ	Base	Outlet	Ambient	BZ	Base	Outlet	TJ	Ambient	BZ	Base	Outlet	Ambient	BZ	Base	Outlet
July-10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/26/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/8/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/4/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/7/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/11/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/10/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/3/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/17/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/9/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/6/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/4/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/8/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/12/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/19/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/16/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Pipe Ports [PP], Inside, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.11 Pond 16S Soil Gas Monitoring Results Summary

Location	Probe # 1		Probe # 2		Probe # 3		Probe # 4		Probe # 5		Probe # 6		Probe # 7	
Date	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG
12/28/2010	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.28	0.00/0.00	0.00	0.00/0.00	0.00
1/13/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.04	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
2/2/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
3/2/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.63	0.00/0.00	0.00	0.00/0.00	0.00
4/11/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.02
5/12/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
6/7 & 6/8/2011	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	1.08	0.00/0.00	0.03	0.00/0.00	0.02
7/6/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.04	0.00/0.00	0.00	0.00/0.00	0.00
8/9/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.55	0.00/0.00	0.00	0.00/0.00	0.00
9/7/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.02	0.00/0.00	0.06
10/5/2011	0.00/0.00	0.23	0.00/0.00	0.03	0.00/0.00	0.03	0.00/0.00	0.07	0.00/0.00	2.02	0.00/0.00	0.06	0.00/0.00	0.00
11/8/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
12/8/2011	0.00/0.00	0.02	0.00/0.00	0.03	0.00/0.00	0.02	0.00/0.00	0.02	0.00/0.00	0.42	0.00/0.00	0.02	0.00/0.00	0.01
1/4/2012	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.88	0.00/0.00	0.13	0.00/0.00	0.02
2/7/2012	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.03	0.00/0.00	0.02	0.00/0.00	4.60	0.00/0.00	0.07	0.00/0.00	0.06
3/6/2012	0.00/0.00	7.95	0.00/0.00	0.05	0.00/0.00	17.00	0.00/0.00	4.89	0.00/0.00	28	0.00/0.00	24	0.00/0.00	6.70
3/21/2012	0.00/0.00	0.03	0.00/0.00	0.01	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.11	0.00/0.00	0.12	0.00/0.00	0.03
4/3/2012	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.10	0.00/0.00	0.01	0.00/0.00	0.49	0.00/0.00	4.94	0.00/0.00	0.13
5/7/2012	0.00/0.00	0.03	0.00/0.00	0.03	0.00/0.00	0.03	0.00/0.00	0.02	0.00/0.00	0.08	0.00/0.00	0.04	0.00/0.00	0.03
6/11/2012	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.00
7/9/2012	0.00/0.00	0.03	0.00/0.00	0.04	0.00/0.00	0.05	0.00/0.00	0.05	0.00/0.00	6.27	0.00/0.00	0.04	0.00/0.00	0.03
8/8/2012	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	2.53	0.00/0.00	0.21	0.00/0.00	0.81
9/17/2012	0.00/0.00	0.10	0.00/0.00	0.02	0.00/0.00	0.07	0.00/0.00	0.00	0.00/0.00	3.60	0.00/0.00	5.27	0.00/0.00	0.35
10/9/2012	0.00/0.00	0.27	0.00/0.00	0.01	0.00/0.00	1.08	0.00/0.00	0.10	0.00/0.00	4.86	0.00/0.00	3.85	0.00/0.00	0.02
11/6/2012	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	1.64	0.00/0.00	0.02	0.00/0.00	0.00
12/4/2012	0.00/0.00	0.23	0.00/0.00	1.10	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
1/8/2013	0.00/0.00	0.55	0.00/0.00	0.16	0.00/0.00	3.49	0.00/0.00	0.05	0.00/0.00	9.50	0.00/0.00	0.03	0.00/0.00	0.05
2/12/2013	0.00/0.00	24	0.00/0.00	1.33	0.00/0.00	0.87	0.00/0.00	0.04	0.00/0.00	3.65	0.00/0.00	1.48	0.00/0.00	0.66
3/19/2013	0.00/0.00	0.25	0.00/0.00	0.08	0.00/0.00	0.98	0.00/0.00	0.07	0.00/0.00	2.30	0.00/0.00	16.30	0.00/0.00	3.25
4/16/2013	0.00/0.00	0.06	0.00/0.00	0.02	0.00/0.00	0.34	0.00/0.00	0.06	0.00/0.00	5.77	0.00/0.00	4.54	0.00/0.00	1.76

Breathing Zone [BZ], 4-6" Above Ground Surface [AGS], and Average Soil Gas [SG] readings in ppm.

Table 3.11 Pond 16S Soil Gas Monitoring Results Summary

Location	Probe # 8		Probe # 9		Probe # 10		Probe # 11		Probe # 12		Probe # 13		Probe # 14	
Date	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG
12/28/2010	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
1/13/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
2/2/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
3/2/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.10	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
4/11/2011	0.00/0.00	0.01	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.02	0.00/0.00	0.02	0.00/0.00	0.00
5/12/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
6/7 & 6/8/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
7/6/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
8/9/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.05	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
9/7/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
10/5/2011	0.00/0.00	0.00	0.00/0.00	0.04	0.00/0.00	0.43	0.00/0.00	8.12	0.00/0.00	0.91	0.00/0.00	0.06	0.00/0.00	0.00
11/8/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
12/8/2011	0.00/0.00	0.01	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	1.51	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.00
1/4/2012	0.00/0.00	0.00	0.00/0.00	0.02	0.00/0.00	0.18	0.00/0.00	3.07	0.00/0.00	1.13	0.00/0.00	0.00	0.00/0.00	0.00
2/7/2012	0.00/0.00	0.04	0.00/0.00	0.04	0.00/0.00	0.55	0.00/0.00	45	0.00/0.00	0.75	0.00/0.00	0.04	0.00/0.00	0.00
3/6/2012	0.00/0.00	1.38	0.00/0.00	33	0.00/0.00	21	0.00/0.00	439	0.00/0.00	53	0.00/0.00	11.10	0.00/0.00	2.51
3/21/2012	0.00/0.00	0.04	0.00/0.00	0.05	0.00/0.00	1.04	0.00/0.00	3.01	0.00/0.00	13.63	0.00/0.00	0.08	0.00/0.00	0.04
4/3/2012	0.00/0.00	0.04	0.00/0.00	0.10	0.00/0.00	2.33	0.00/0.00	4.49	0.00/0.00	24	0.00/0.00	0.05	0.00/0.00	0.01
5/7/2012	0.00/0.00	0.03	0.00/0.00	0.06	0.00/0.00	0.05	0.00/0.00	0.19	0.00/0.00	0.03	0.00/0.00	0.01	0.00/0.00	0.01
6/11/2012	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.05	0.00/0.00	0.09	0.00/0.00	0.00	0.00/0.00	0.00
7/9/2012	0.00/0.00	0.04	0.00/0.00	0.03	0.00/0.00	0.03	0.00/0.00	1.50	0.00/0.00	0.01	0.00/0.00	0.02	0.00/0.00	0.02
8/8/2012	0.00/0.00	0.26	0.00/0.00	1.15	0.00/0.00	0.03	0.00/0.00	4.72	0.00/0.00	0.08	0.00/0.00	0.01	0.00/0.00	0.00
9/17/2012	0.00/0.00	0.04	0.00/0.00	0.13	0.00/0.00	0.63	0.00/0.00	11.97	0.00/0.00	2.89	0.00/0.00	0.00	0.00/0.00	0.00
10/9/2012	0.00/0.00	0.04	0.00/0.00	1.10	0.00/0.00	7.25	0.00/0.00	85	0.00/0.00	16.70	0.00/0.00	0.14	0.00/0.00	0.00
11/6/2012	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	4.69	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
12/4/2012	0.00/0.00	0.00	0.00/0.00	1.04	0.00/0.00	25	0.00/0.00	39	0.00/0.00	135	0.00/0.00	1.70	0.00/0.00	0.04
1/8/2013	0.00/0.00	0.10	0.00/0.00	10.12	0.00/0.00	6	0.00/0.00	92	0.00/0.00	68	0.00/0.00	0.17	0.00/0.00	0.03
2/12/2013	0.00/0.00	0.65	0.00/0.00	0.68	0.00/0.00	227	0.00/0.00	252	0.00/0.00	239	0.00/0.00	7.25	0.00/0.00	9.60
3/19/2013	0.00/0.00	0.91	0.00/0.00	0.55	0.00/0.00	0.21	0.00/0.00	37	0.00/0.00	204	0.00/0.00	1.55	0.00/0.00	1.29
4/16/2013	0.00/0.00	0.65	0.00/0.00	3.27	0.00/0.00	97	0.00/0.00	47	0.00/0.00	133	0.00/0.00	0.16	0.00/0.00	0.25

Breathing Zone [BZ], 4-6" Above Ground Surface [AGS], and Average Soil Gas [SG] readings in ppm.

Table 3.12 Pond 16S TMP Monitoring Results Summary

	TMP 01		TMP 02		TMP 03		TMP 04		TMP 05		TMP 06		TMP 07		TMP 08		Pond
Date	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	Average
11/10/10	-	535	-	379	-	273	-	316	-	533	-	445	-	375	-	567	428
12/16/10	0.00	1,091	0.00	875	0.00	467	0.00	1,400	0.00	280	0.00	490	0.00	897	0.00	580	760
01/13/11	0.00	1,195	0.00	1,282	0.00	431	0.00	842	0.00	232	0.00	476	0.00	396	0.00	966	728
02/02/11	0.00	1,619	0.00	1,174	0.00	460	0.00	1,005	0.00	887	0.00	558	0.00	507	0.00	1,040	906
03/02/11	0.00	1,960	0.00	1,350	0.00	517	0.00	982	0.00	1,246	0.00	713	0.00	685	0.00	1,021	1,059
04/11/11	0.00	1,703	0.00	827	0.00	457	0.00	835	0.00	2,383	0.00	1,227	0.00	2,068	0.00	1,476	1,372
05/11/11	0.00	2,296	0.00	905	0.00	366	0.00	655	0.00	3,222	0.00	2,390	0.00	2,037	0.00	1,440	1,664
06/08/11	0.00	3,210	0.00	974	0.00	279	0.00	740	0.00	3,187	0.00	3,180	0.00	1,978	0.00	1,417	1,871
07/06/11	0.00	3,932	0.00	1,026	0.00	399	0.00	690	0.00	3,918	0.00	4,255	0.00	2,350	0.00	1,744	2,289
08/09/11	0.00	4,774	0.00	1,280	0.00	488	0.00	897	0.00	6,053	0.00	5,122	0.00	3,477	0.00	2,064	3,019
09/07/11	0.00	6,048	0.00	1,202	0.00	269	0.00	1,003	0.00	6,653	0.00	6,083	0.00	3,644	0.00	2,511	3,427
10/05/11	0.00	7,329	0.00	1,662	0.00	527	0.00	1,386	0.00	6,478	0.00	5,525	0.00	3,462	0.00	2,907	3,660
11/09/11	0.00	7,707	0.00	1,624	0.00	667	0.00	1,429	0.00	7,455	0.00	6,494	0.00	4,414	0.00	4,454	4,281
12/7 & 12/8/2011	0.00	9,112	0.00	1,772	0.00	678	0.00	1,249	0.00	9,154	0.00	8,774	0.00	5,775	0.00	5,389	5,238
01/04/12	0.00	13,658	0.00	2,307	0.00	1,186	0.00	2,124	0.00	15,530	0.00	10,343	0.00	6,233	0.00	6,159	7,193
02/07/12	0.00	15,526	0.00	3,471	0.00	1,745	0.00	2,721	0.00	24,260	0.00	17,459	0.00	11,324	0.00	10,095	10,825
03/07/12	0.00	19,567	0.00	4,271	0.00	2,845	0.00	3,504	0.00	26,940	0.00	22,338	0.00	12,035	0.00	11,619	12,890
04/06/12	0.00	20,078	0.00	5,121	0.00	3,041	0.00	4,596	0.00	23,528	0.00	21,169	0.00	13,320	0.00	12,819	12,959
05/08/12	0.00	23,737	0.00	6,443	0.00	4,017	0.00	5,398	0.00	31,920	0.00	23,968	0.00	15,255	0.00	12,158	15,362
06/11/12	0.00	25,363	0.00	7,628	0.00	4,684	0.00	5,024	0.00	36,390	0.00	27,690	0.00	18,342	0.00	14,603	17,466
07/09/12	0.00	26,137	0.00	8,391	0.00	5,063	0.00	5,418	0.00	41,415	0.00	27,953	0.00	17,329	0.00	15,400	18,388
08/01/12	0.00	39,218	0.00	13,632	0.00	6,206	0.00	5,637	0.00	40,842	0.00	28,939	0.00	17,735	0.00	14,781	20,874
09/17/12	0.00	38,727	0.00	13,416	0.00	5,806	0.00	5,299	0.00	46,675	0.00	32,586	0.00	20,424	0.00	14,422	22,169
10/09/12	0.00	36,951	0.00	14,470	0.00	5,985	0.00	3,742	0.00	48,772	0.00	33,116	0.00	20,285	0.00	15,826	22,393
11/06/12	0.00	37,894	0.00	13,516	0.00	5,240	0.00	4,808	0.00	51,742	0.00	32,520	0.00	18,483	0.00	15,622	22,478
12/04/12	0.00	28,228	0.00	14,878	0.00	6,121	0.00	4,152	0.00	46,858	0.00	31,387	0.00	16,594	0.00	15,347	20,446
01/08/13	0.00	29,884	0.00	19,844	0.00	7,525	0.00	5,664	0.00	52,449	0.00	31,593	0.00	17,553	0.00	17,387	22,737
02/12/13	0.00	31,905	0.00	22,614	0.00	8,857	0.00	5,139	0.00	50,423	0.00	35,420	0.00	NF	0.00	18,174	24,647
03/19/13	0.00	26,035	0.00	26,830	0.00	28,737	0.00	18,013	0.00	56,441	0.00	39,060	0.00	NF	0.00	21,286	30,915
04/16/13	0.00	59,958	0.00	31,357	0.00	22,339	0.00	20,621	0.00	56,328	0.00	39,992	0.00	NF	0.00	23,374	36,281

Notes:

November 10, 2011 results measured during Pond 16S GETS operation, all other results using GETS for TMP monitoring per Assessment Study Work Plan.

Breathing Zone (BZ) and Source Gas Concentrations in ppm.

NF means No Flow.

Shaded cells indicate results obtained during operation of GETS.

Table 3.13 Pond 17 Appurtenance Monitoring Results Summary

TMP Enclosure															
	T-01					T-02					T-03				
	Ambient Air		Leak Detection			Ambient Air		Leak Detection			Ambient Air		Leak Detection		
Date	Ambient	BZ	Base	Lid	PO	Ambient	BZ	Base	Lid	PO	Ambient	BZ	Base	Lid	PO
7/28/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/12/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/14/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/22/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TMP Enclosure															
	T-04					T-05					T-06				
	Ambient Air		Leak Detection			Ambient Air		Leak Detection			Ambient Air		Leak Detection		
Date	Ambient	BZ	Base	Lid	PO	Ambient	BZ	Base	Lid	PO	Ambient	BZ	Base	Lid	PO
7/28/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/12/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/14/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/22/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Door, Conduit, Outlet, Extraction Flange [EF] and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.13 Pond 17 Appurtenance Monitoring Results Summary

Date	LCDRS Sump			
	Ambient Air		Leak Detection	
	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	NS	0.00
10/25/10	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00
1/17/11	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00
3/16/11	0.00	0.00	0.00	0.00
4/21/11	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00
6/14/11	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00
2/12/12	0.00	0.00	0.00	0.00
5/14/12	0.00	0.00	0.00	0.00
8/16/12	0.00	0.00	0.00	0.00
3/22/13	0.00	0.00	0.00	0.00

Date	Temperature & Pressure Panel				LCDRS Panel			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection	
	Ambinet	BZ	Door	Conduit	Ambinet	BZ	Door	Conduit
7/28/10	NS	NS	NS	NS	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00	NS	NS	NS	NS
11/22/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/12/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/14/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/22/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Door, Conduit, Outlet, Extraction Flange [EF] and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.13 Pond 17 Appurtenance Monitoring Results Summary

Perimeter Gas Collection Pipe Riser or Pressure monitor															
	Control panel					NE Standpipe					SE Standpipe				
	Ambient Air		Leak Detection			Ambient Air		Leak Detection			Ambient Air		Leak Detection		
Date	Ambient	BZ	Base	Outlet	TJ	Ambient	BZ	Base	Outlet	EF	Ambient	BZ	Base	Outlet	EF
7/28/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/12/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/14/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/22/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Perimeter Gas Collection Pipe Riser or Pressure monitor										
	SW Standpipe					NW Standpipe				
	Ambient Air		Leak Detection			Ambient Air		Leak Detection		
Date	Ambient	BZ	Base	Outlet	EF	Ambient	BZ	Base	Outlet	EF
7/28/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/12/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/14/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/22/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Door, Conduit, Outlet, Extraction Flange [EF] and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.14 Pond 18A Appurtenance Monitoring Results Summary

TMP Enclosure															
Date	T-01					T-02					T-03				
	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside
	Ambient	BZ	Base	Lid		Ambient	BZ	Base	Lid		Ambient	BZ	Base	Lid	
7/28/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
10/25/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
11/23/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
12/20/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
1/18/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
2/23/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	11.50	0.00	-
2/24/11	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	-
3/16/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
4/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/10/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/8/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/13/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/5/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/9/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/5/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/5/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/17/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/8/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/7/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00
11/20/12	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00
12/3/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/7/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/13/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/18/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/15/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Recompacted soil around T-03 base and re-sampled.

Note: Re-sampled T-03 after tightening loose flange.

Note: Monitored after maintenance completed at T-03.

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Inside, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.14 Pond 18A Appurtenance Monitoring Results Summary (Updated 1Q13)

Cap Drainage Lift Station														
Date	LS-01							LS-02						
	Ambient Air		Leak Detection				Inside	Ambient Air		Leak Detection				Inside
	Ambient	BZ	Base	Lid	VP	OF		Ambient	BZ	Base	Lid	VP	OF	
7/28/10	0.00	0.00	NS	0.00	NS	NS	-	0.00	0.00	NS	0.00	NS	NS	-
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-
11/23/10	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-
1/18/11	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-
3/16/11	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-
4/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/10/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/11	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/8/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/13/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/5/12	0.00	0.00	0.00	0.00	0.00	0.00	3.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/9/12	0.00	0.00	0.00	0.00	0.00	0.00	10.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/5/12	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/5/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/17/12	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.03
10/8/12	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/7/12	0.00	0.00	Maintenance in Progress					0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/20/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-
12/3/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/7/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/13/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/18/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/15/13	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Monitored LS-01 after maintenance.

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Inside, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.14 Pond 18A Appurtenance Monitoring Results Summary (Updated 1Q13)

Instrumentation Panel																				
Date	Temperature & Pressure					LS-01					LS-02					LCDRS				
	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside
	Ambinet	BZ	Door	Conduit		Ambinet	BZ	Door	Conduit		Ambinet	BZ	Door	Conduit		Ambinet	BZ	Door	Conduit	
7/28/10	NS	NS	NS	NS	-	NS	NS	NS	NS	-	NS	NS	NS	NS	-	NS	NS	NS	NS	-
10/25/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
11/23/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
12/20/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
1/18/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
2/23/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
3/16/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
4/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/10/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/8/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/13/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/5/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/9/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/5/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/5/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/17/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/8/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/7/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Maintenance in Progress			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/20/12	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-
12/4/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/7/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/13/13	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/14/13	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/18/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/15/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Monitored
LS-01 after
maintenance.

Note: Re-monitored
T&P panel after re-
seal conduit

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Inside, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.14 Pond 18A Appurtenance Monitoring Results Summary (Updated 1Q13)

Perimeter Gas Collection Pipe Riser or Pressure Monitor									
Date	East Side					South Side			
	Ambient Air		Leak Detection			Ambient Air		Leak Detection	
	Ambient	BZ	Base	Outlet	TJ	Ambient	BZ	Base	Outlet
7/28/10	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/23/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/10/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/8/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/13/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/5/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/9/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/5/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/5/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/17/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/8/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/7/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/3/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/7/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/13/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/18/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/15/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

LCDRS Sump					
Date	Ambient Air		Leak Detection		Inside
	Ambient	BZ	Base	Lid	
7/28/10	0.00	0.00	NS	0.00	-
10/25/10	0.00	0.00	0.00	0.00	-
11/23/10	0.00	0.00	0.00	0.00	-
12/20/10	0.00	0.00	0.00	0.00	-
1/18/11	0.00	0.00	0.00	0.00	-
2/23/11	0.00	0.00	0.00	0.00	-
3/16/11	0.00	0.00	0.00	0.00	-
4/19/11	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00
6/15/11	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00
10/10/11	0.00	0.00	0.00	0.00	0.00
10/25/11	0.00	0.00	0.00	0.00	0.00
11/8/11	0.00	0.00	0.00	0.00	0.00
11/21/11	0.00	0.00	0.00	0.00	0.00
12/20/11	0.00	0.00	0.00	0.00	0.00
1/13/12	0.00	0.00	0.00	0.00	0.04
4/5/12	0.00	0.00	0.00	0.00	0.00
5/9/12	0.00	0.00	0.00	0.00	0.00
6/5/12	0.00	0.00	0.00	0.00	0.00
7/5/12	0.00	0.00	0.00	0.00	0.00
8/9/12	0.00	0.00	0.00	0.00	0.00
9/17/12	0.00	0.00	0.00	0.00	0.00
10/8/12	0.00	0.00	0.00	0.00	0.00
11/7/12	0.00	0.00	0.00	0.00	0.00
12/3/12	0.00	0.00	0.00	0.00	0.00
1/7/13	0.00	0.00	0.00	0.00	0.04
2/13/13	0.00	0.00	0.00	0.00	0.00
3/18/13	0.00	0.00	0.00	0.00	0.00
4/15/13	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Inside, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.16 Pond 18A Soil Gas Monitoring Results Summary

Perimeter Shallow Probes																				
Location	Probe # 1		Probe # 2		Probe # 3		Probe # 4		Probe # 5		Probe # 6		Probe # 7		Probe # 8		Probe # 9		Probe # 10	
Date	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG
7/26/2010	0.00/0.00	0.00	0.00/0.00	2.81	0.00/0.00	0.63	0.00/0.00	58	0.00/0.00	0.01	0.00/0.00	0.21	0.00/0.00	0.00	0.00/0.00	0.04	0.00/0.00	0.03	0.00/0.00	0.00
12/16/2010	0.00/0.00	0.08	0.00/0.00	19	0.00/0.00	1.58	0.00/0.00	55	0.00/0.00	0.04	0.00/0.00	1.34	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
1/18/2011	0.00/0.00	0.11	0.00/0.00	156	0.00/0.00	3.99	0.00/0.00	658	0.00/0.00	0.32	0.00/0.00	2.74	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
2/22/2011	0.00/0.00	0.00	0.00/0.00	106	0.00/0.00	121	0.00/0.00	1000+	0.00/0.00	0.68	0.00/0.00	0.17	0.00/0.00	0.02	0.00/0.00	0.04	0.00/0.00	0.00	0.00/0.00	0.00
3/3/2011	0.00/0.00	0.00	0.00/0.00	6.75	0.00/0.00	3.30	0.00/0.00	1000+	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
4/12/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
5/4/2011	0.00/0.00	0.00	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.02	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
5/25/2011	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
6/20/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
7/27/2011	0.00/0.00	0.03	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00
8/24/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
9/20/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
10/10/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
10/25/2011	0.00/0.00	0.00	0.00/0.00	0.19	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
11/8/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
11/21/2011	0.00/0.00	0.02	0.00/0.00	0.09	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
12/20/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
1/13/2012	0.00/0.00	0.00	0.00/0.00	3.68	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
2/7/2012	0.00/0.00	0.00	0.00/0.00	1.06	0.00/0.00	0.00	0.00/0.00	0.07	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
3/6/2012	0.00/0.00	0.07	0.00/0.00	38	0.00/0.00	6.92	0.00/0.00	23	0.00/0.00	0.08	0.00/0.00	0.71	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
3/22/2012	0.00/0.00	0.00	0.00/0.00	0.04	0.00/0.00	0.12	0.00/0.00	0.78	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.02
4/3/2012	0.00/0.00	0.17	0.00/0.00	5.04	0.00/0.00	0.15	0.00/0.00	1.41	0.00/0.00	0.04	0.00/0.00	0.34	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
5/8/2012	0.00/0.00	0.05	0.00/0.00	0.27	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.01
6/5/2012	0.00/0.00	0.00	0.00/0.00	9.70	0.00/0.00	0.58	0.00/0.00	6.07	0.00/0.00	0.00	0.00/0.00	0.06	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
7/5/2012	0.00/0.00	0.00	0.00/0.00	0.49	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
8/8/2012	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
9/18/2012	0.00/0.00	0.03	0.00/0.00	0.06	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.04	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.11
10/8/2012	0.00/0.00	0.00	0.00/0.00	3.75	0.00/0.00	0.02	0.00/0.00	0.94	0.00/0.00	0.00	0.00/0.00	0.13	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
11/6/2012	0.00/0.00	0.00	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
12/3/2012	0.00/0.00	0.00	0.00/0.00	66	0.00/0.00	3.58	0.00/0.00	84	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
1/7/2013	0.00/0.00	0.00	0.00/0.00	20	0.00/0.00	1.70	0.00/0.00	5	0.00/0.00	0.05	0.00/0.00	0.26	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
2/13/2013	0.00/0.00	0.00	0.00/0.00	12	0.00/0.00	2.05	0.00/0.00	243	0.00/0.00	0.10	0.00/0.00	0.05	0.00/0.00	0.03	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00
3/18/2013	0.00/0.00	0.08	0.00/0.00	42	0.00/0.00	1.33	0.00/0.00	23	0.00/0.00	0.44	0.00/0.00	0.51	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
4/15/2013	0.00/0.00	0.19	0.00/0.00	19	0.00/0.00	1.76	0.00/0.00	51	0.00/0.00	0.20	0.00/0.00	0.52	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.03	0.00/0.00	0.00

Breathing Zone [BZ], 4-6" Above Ground Surface [AGS], and Average Soil Gas [SG] readings in ppm.
 Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Table 3.16 Pond 18A Soil Gas Monitoring Results Summary

Step-Out Probes																
Location	Probe # 2A		Probe # 4A		Probe # 7A		Probe # 9A		Probe # LS-1 A		Probe # LS-1 B		Probe # LS-2 A		Probe # LS-2 B	
Monitor Elevation	4448.7		4448.7		4448.7		4448.7		4449.2		4449.2		4450.0		4450.0	
Depth Below Ground Surface (ft)	3.25		3.50		3.00		2.50		2.85		2.85		3.00		3.00	
Date	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG
5/4/2011	0.00/0.00	0.01	0.00/0.00	0.06	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.03
5/25/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.04	0.00/0.00	0.03
6/20/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
7/27/11	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
8/24/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
9/20/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
10/10/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
10/25/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
11/8/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
11/21/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
12/20/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
1/13/2012	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
2/7/2012	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
3/6/2012	0.00/0.00	1.57	0.00/0.00	0.04	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	4.25	0.00/0.00	1.79
3/22/2012	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.00
4/3/2012	0.00/0.00	0.04	0.00/0.00	0.04	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	1.27	0.00/0.00	0.51
5/8/2012	0.00/0.00	0.03	0.00/0.00	0.04	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.02	0.00/0.00	0.16
6/5/2012	0.00/0.00	0.04	0.00/0.00	0.04	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.00
7/5/2012	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
8/8/2012	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
9/18/2012	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.05	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.02
10/8/2012	0.00/0.00	0.02	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.00
11/6/2012	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
12/3/2012	0.00/0.00	0.99	0.00/0.00	0.10	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
1/7/2013	0.00/0.00	0.10	0.00/0.00	0.05	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.03
2/13/2013	0.00/0.00	0.75	0.00/0.00	0.24	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.04	0.00/0.00	0.05
3/18/2013	0.00/0.00	0.88	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.02	0.00/0.00	0.03
4/15/2013	0.00/0.00	0.06	0.00/0.00	0.62	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.01

Breathing Zone [BZ] and Average Soil Gas [SG] readings in ppm.

Shaded cells indicate operation of gas extraction and treatment system at pond during the monitoring event.

Figure 4-1. Pond 8E Perimeter Pipe Phosphine Monitoring Results through March 2013

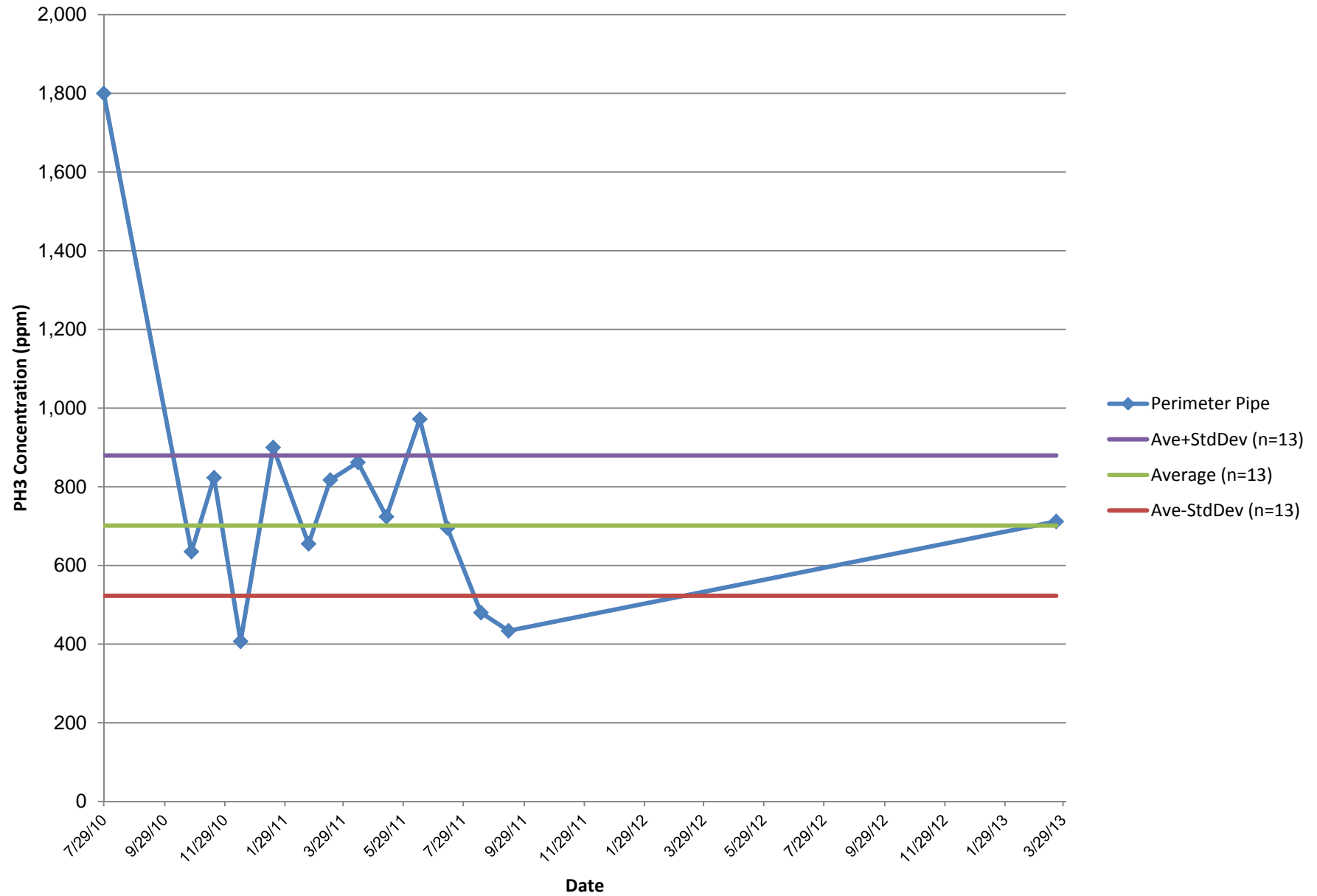


Figure 4-1a. Pond 17 Perimeter Pipe PH3 Concentrations through March 2013

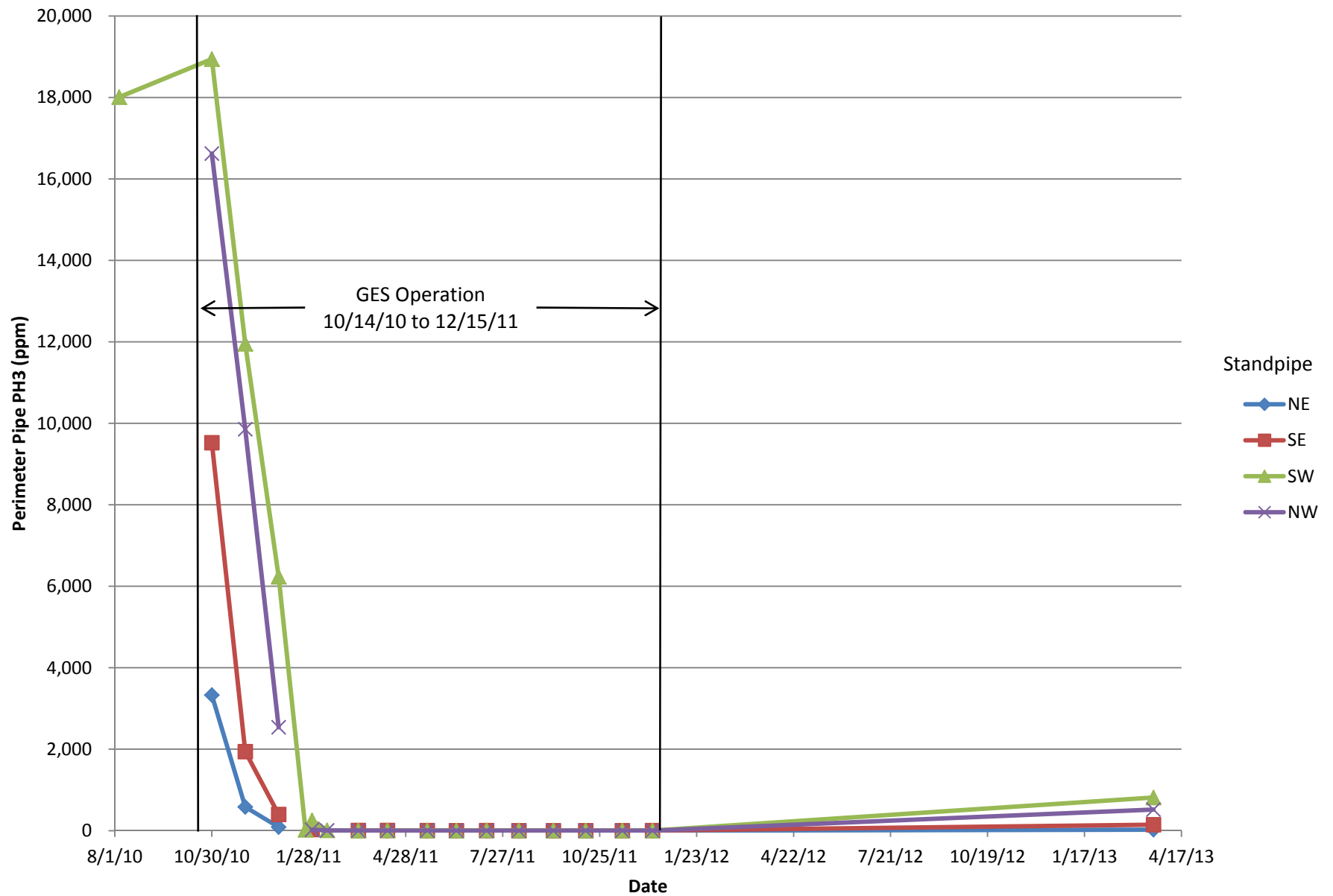


FIGURE 4-3. Pond 16S Average TMP and Perimeter Individual and Average Standpipe PH3 Concentration (April 2013)

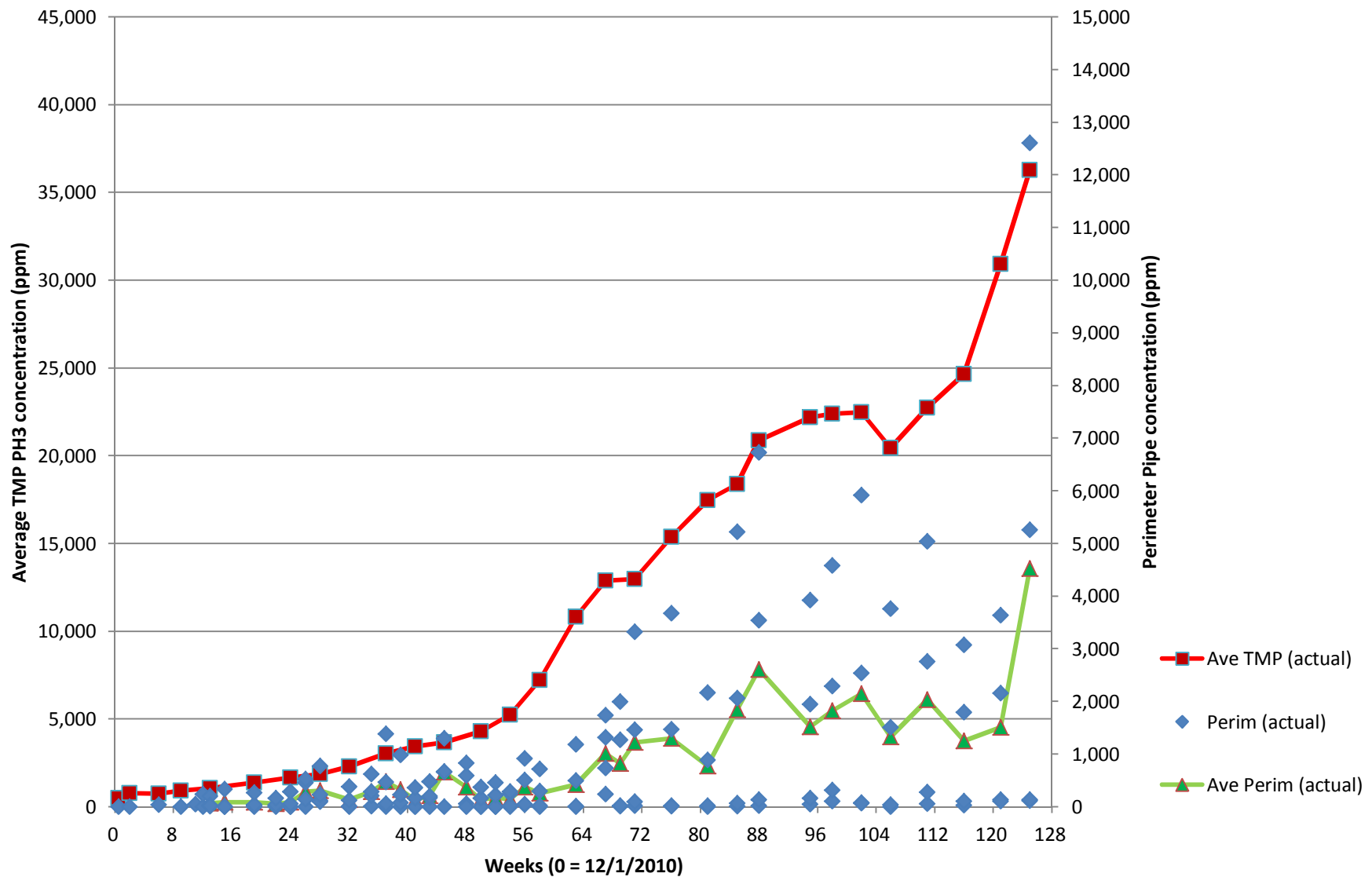


Figure 4-4. Pond 16S TMP Phosphine Concentrations (April 2013)

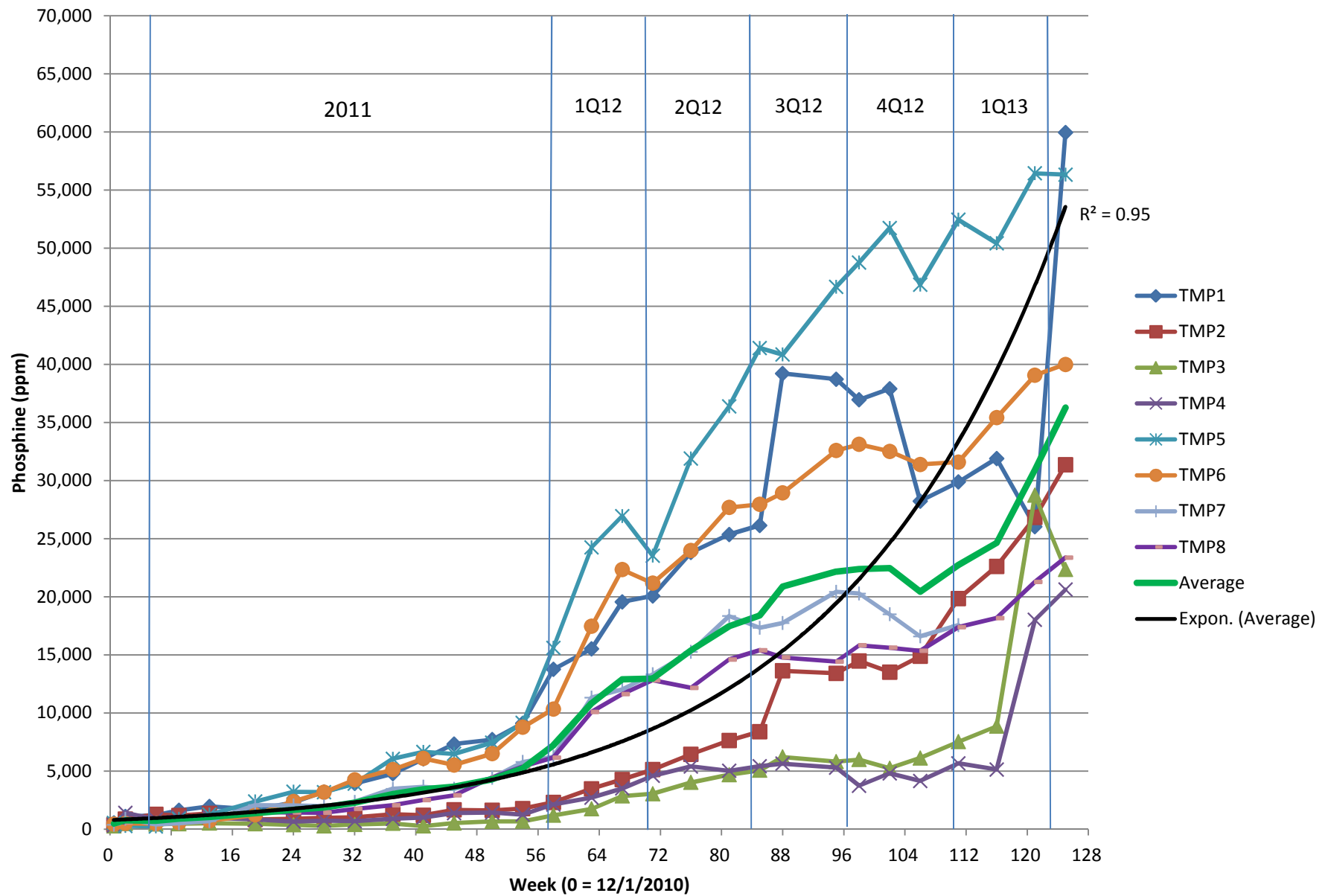


Figure 4-5. Pond 16S Perimeter Pipe Phosphine Concentrations (April 2013)

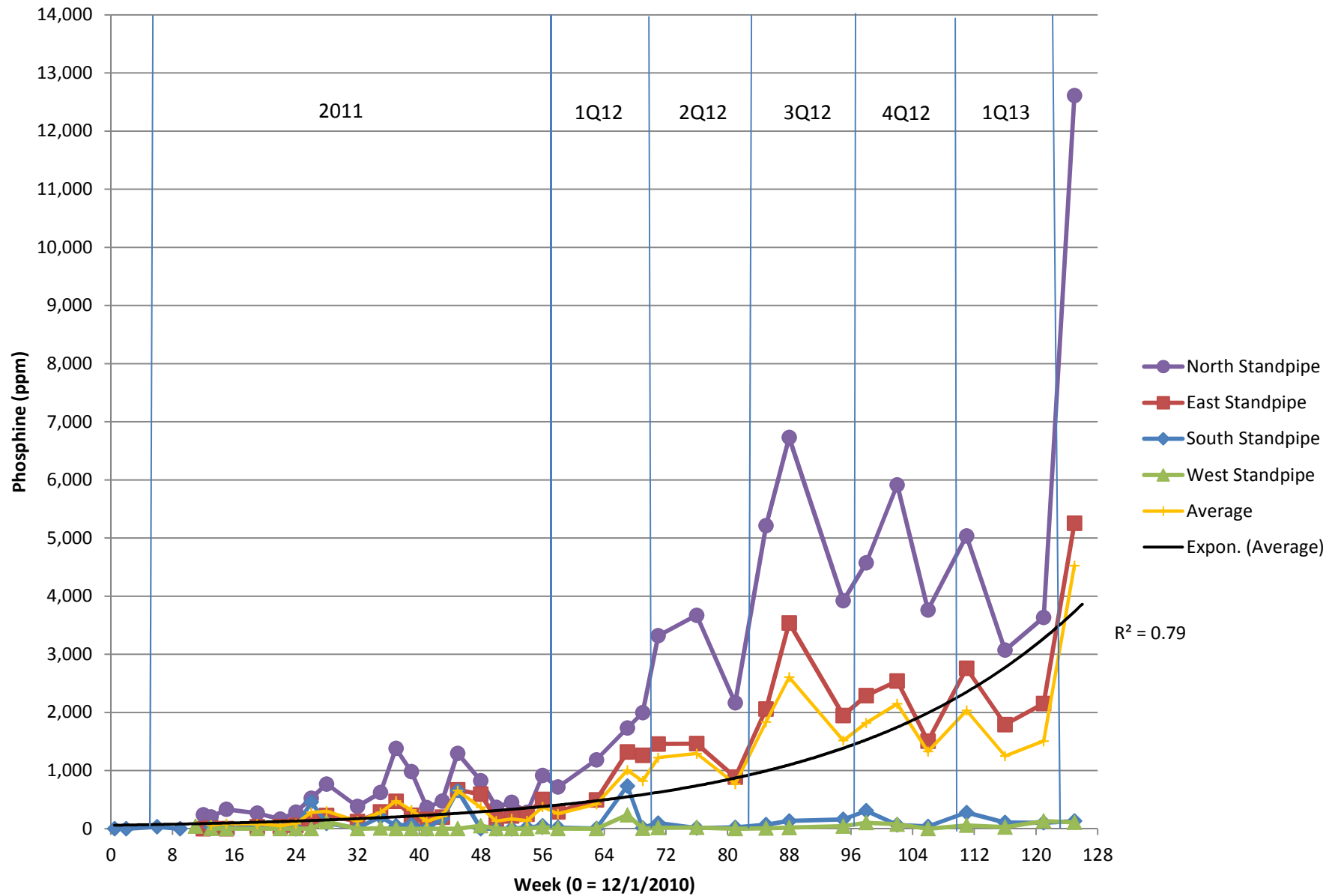


Figure 4-7. Pond 16S Soil Gas Probe Phosphine Concentrations (April 2013)

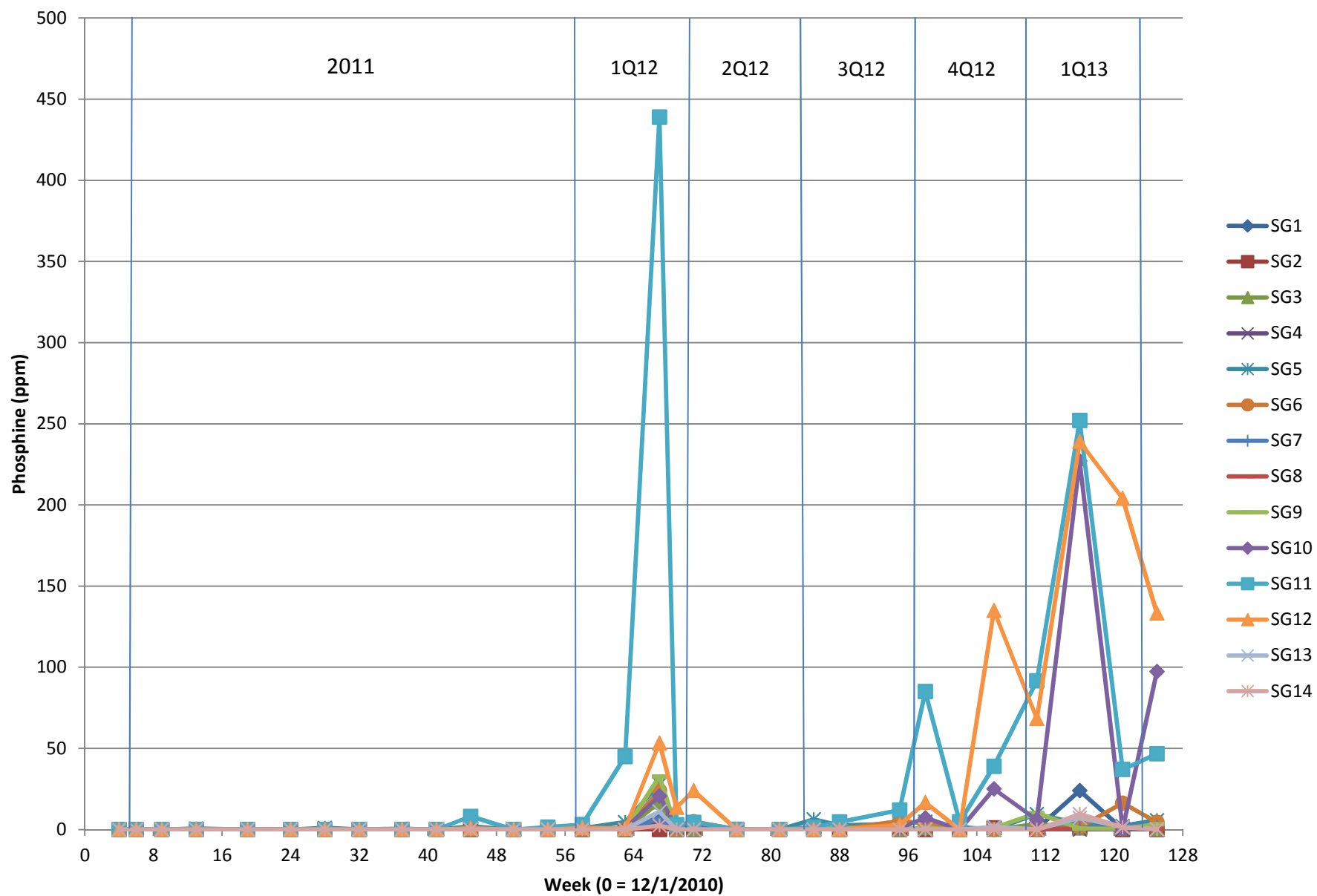


Figure 4-8. Pond 16S N and S Perimeter Pipe and Soil Gas 5 and 11 (April 2013)

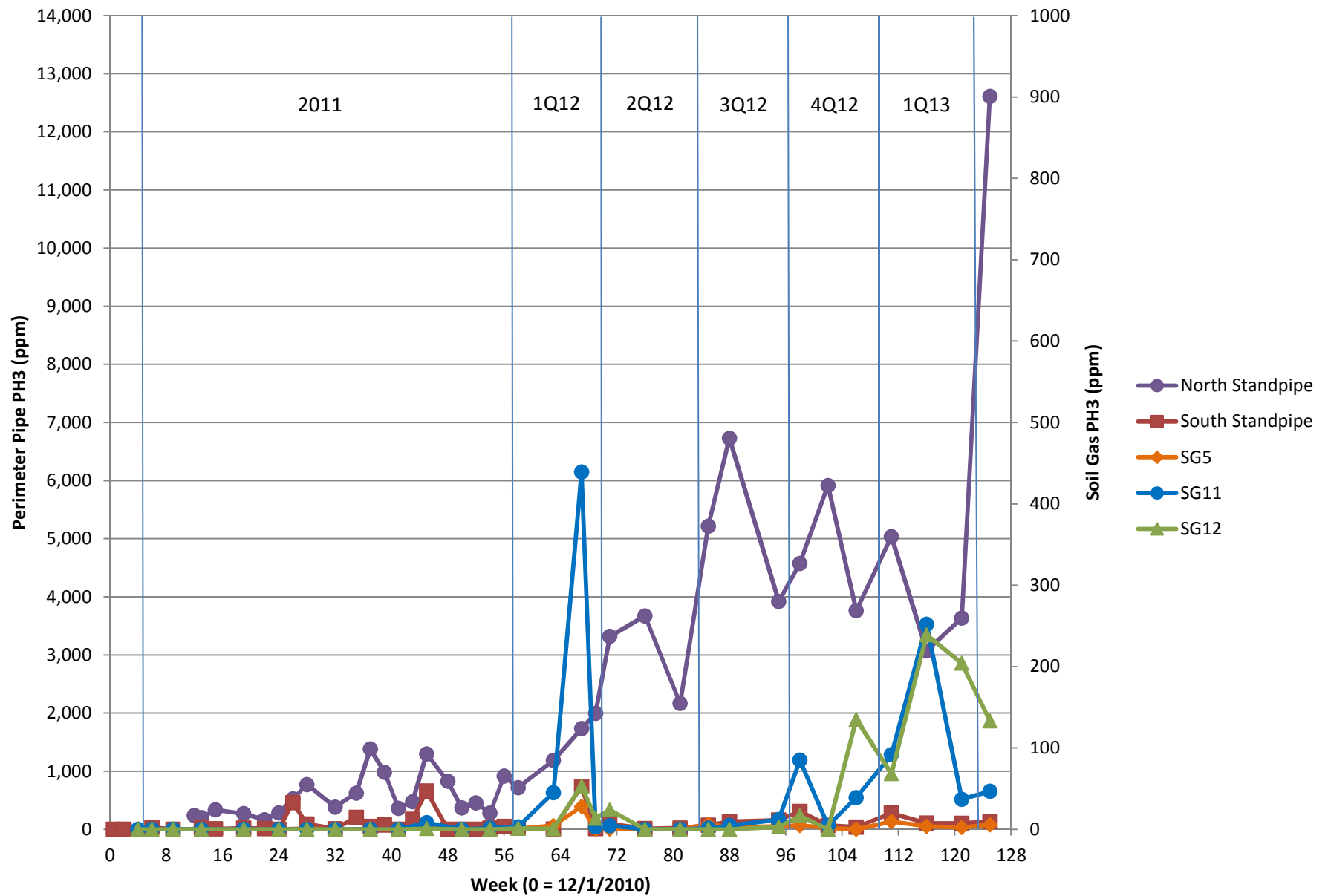


Figure 4-10. Pond 18A Perimeter Pipe and Soil Gas PH3 Monitoring Results through April 2013
East Standpipe (SP) Monthly GES Average March 31 to Oct 5, 2011

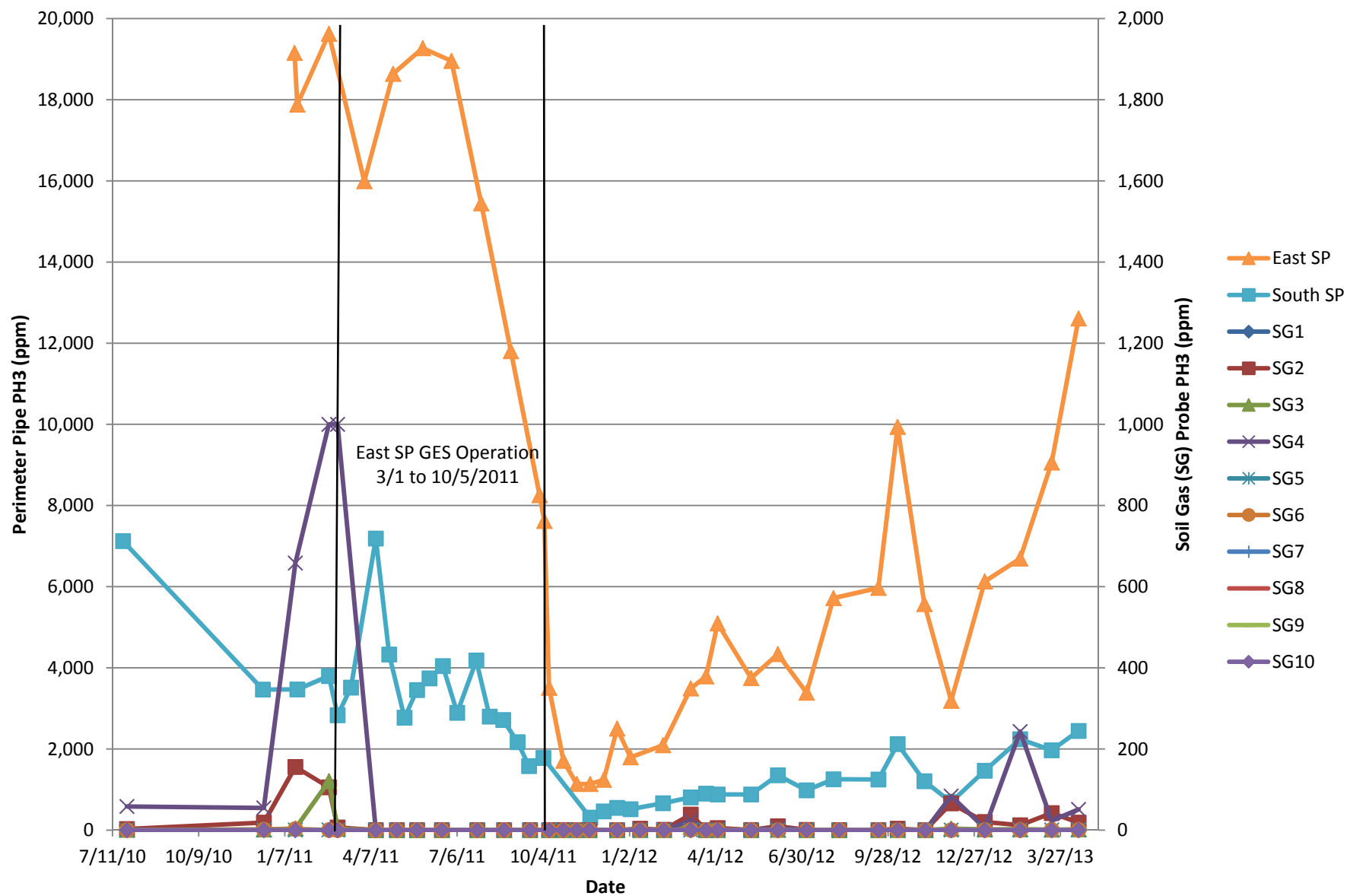


Figure 4-12. Pond 18A Perimeter Pipe and Shallow Soil Gas
October 2011 to April 2013

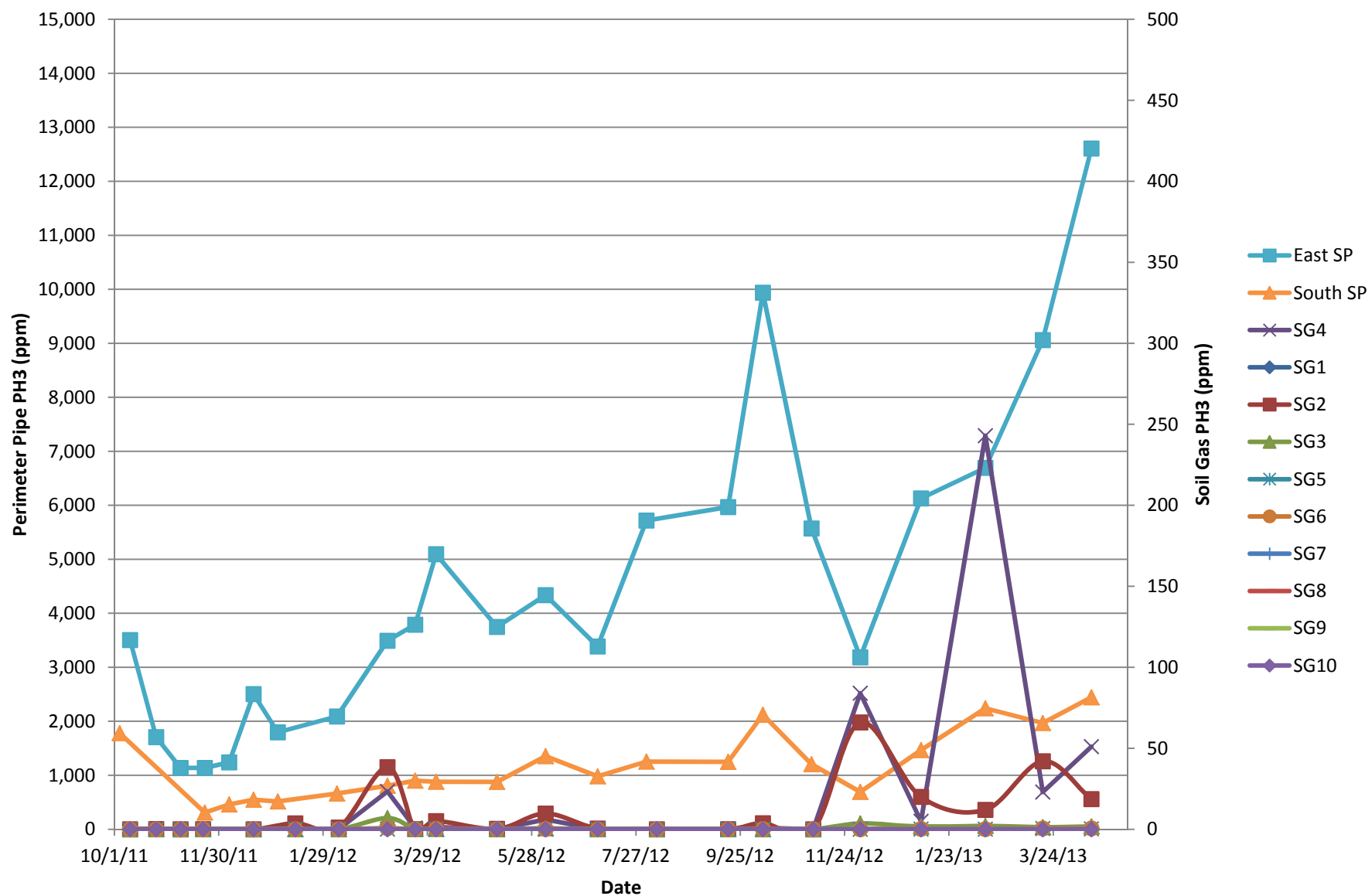


Figure 5-1a. Pond 16S TMP, Perimeter Pipe and Soil Gas Trends (April 2013)

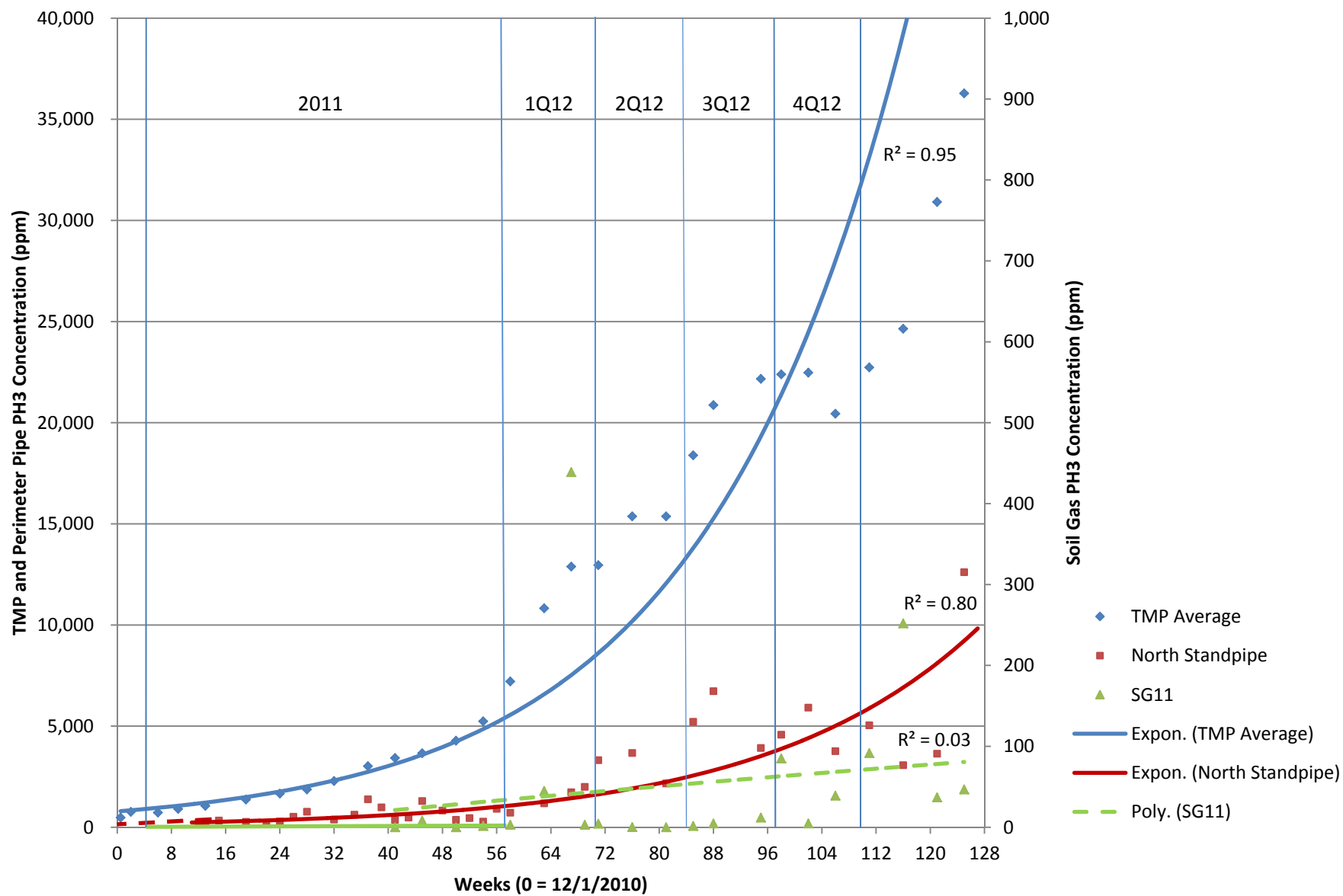


Figure 5-1b. Pond 16S TMP, Perimeter Pipe and Soil Gas Trends (April 2013)
Regression on North Standpipe Week 50 (11/8/11) Forward

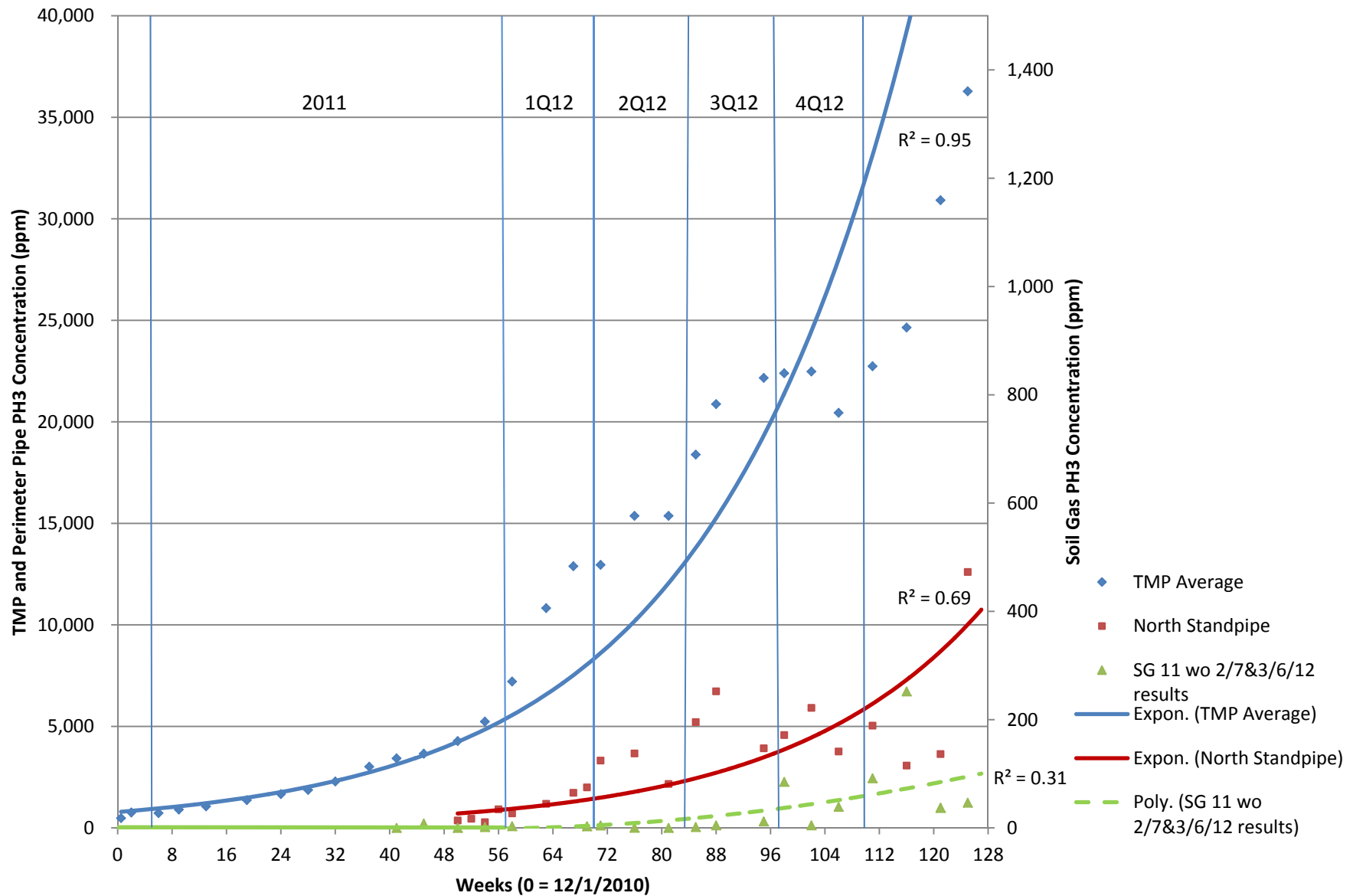
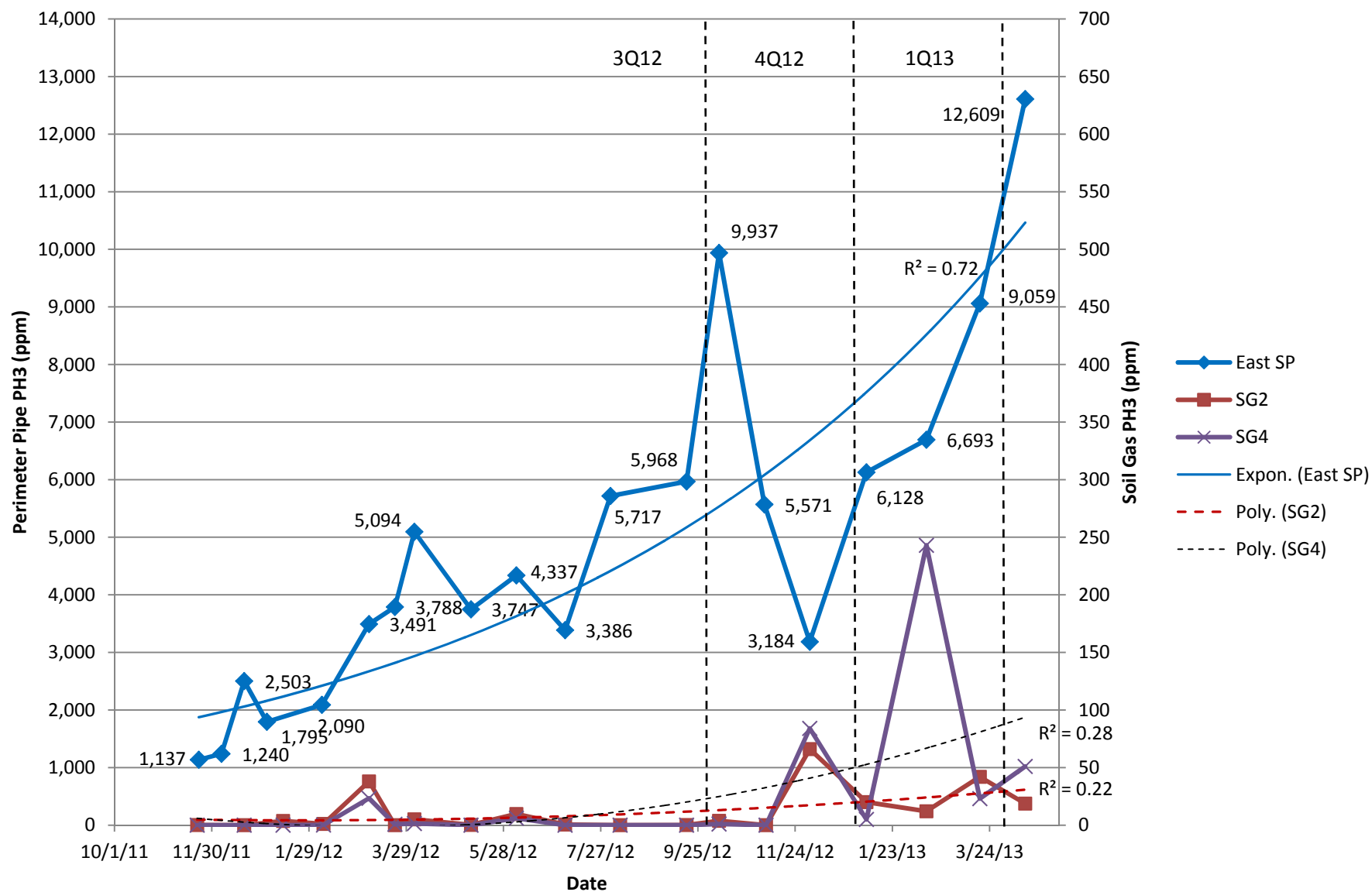


Figure 5-2. Pond 18A Perimeter Pipe and Shallow Soil Gas Trends
November 21, 2011 to April 15, 2013 Actual



ATTACHMENT A

FMC's responses to EPA's Draft Comments on FMC's July 16, 2012, Framework for Post-Closure Phosphine Monitoring - RCRA Ponds, FMC Facility, Pocatello, ID, as clarified during an EPA-FMC conference call on September 14, 2012.

FMC Response, October 16, 2012

To:

EPA Draft Comments on FMC's July 16, 2012,
Framework for Post-Closure Phosphine Monitoring
RCRA Ponds, FMC Facility, Pocatello, ID
Emailed to FMC on September 07, 2012 and
clarified during EPA-FMC Conference Call on September 14, 2012

EPA's draft comments on the *Framework for Post-Closure Phosphine Monitoring (at the) RCRA Ponds ("Framework")* are restated below in italics with a summary of EPA's clarifications for General Comments 1 and 2 and Specific Comment 10, followed by FMC's response.

General Comments

1. *This document is focused only on preventing releases of phosphine to ambient air at levels of concern. It ignores the fact that protection of the infrastructure is also critical to protecting human health and the environment. There needs to be discussion about what concentrations will ensure that autoignition will not occur in the perimeter piping or other appurtenances and what concentrations are necessary to protect the liners.*

EPA Clarification: During the conference call, FMC requested clarification of "critical infrastructure" and listed (1) final cap (e.g., FML/GCL components), (2) gas collection piping including connections and standpipes, and (3) ET cap drainage systems including lift stations. EPA added two items to the "critical infrastructure" and listed (4) pond liner and (5) LCDRS systems.

FMC Response: The Framework is a summary document and was not intended to restate all of the monitoring data and observations contained in the numerous RCRA Pond UAO submittals. Please recall that the Framework was prepared as the basis for developing Section 3 of the amended RCRA Pond Post-Closure Plan ("aPCP"). Section 3 of that plan was reserved for the RCRA Pond Gas Monitoring Program in the final red-line draft revision of the aPCP provided to EPA on July 8, 2011. FMC does not expect to revise the Framework per se, rather, the EPA requested discussion regarding protection of critical infrastructure will be incorporated into a Final Update of the Phosphine Assessment Study that will function as the final RCRA Pond Phosphine Assessment Study Report.

FMC acknowledges the document could have more explicitly stated that the perimeter pipe trigger for gas extraction and treatment was set to keep PH₃ concentrations from exceeding the LEL in order to protect the gas collection and outlet piping and prevent auto-ignition and conditions such as were observed in the Pond 15S west gas extraction piping (described in greater detail in *Pond 15S West Gas Extraction Piping Field Observations and Evaluation of Probable Cause of Damage*, March 9, 2012). The document could have also explicitly restated FMC's previously stated position that extraction and treatment of source gas below

the LEL is inherently safer for GES operators. These clarifications will be incorporated into the Final Update of the Phosphine Assessment Study.

Additionally, to provide further assurance that concentrations in perimeter pipe do not exceed the LEL, as described in response to Specific Comment 11 below, FMC has incorporated a margin of safety and the perimeter pipe PH3 concentration trigger for gas extraction and treatment will be set at 14,000 ppm when Section 3 of the aPCP is drafted.

With respect to protection of the final cap (item No. 1 in EPA's clarification) geosynthetic components (HDPE and GCL) and pond liners (either PVC or HDPE), the Closure Plans included information that evaluated and found HDPE and PVC were both compatible for the liners at the RCRA Ponds. HDPE was selected for the final cover FML layer due to its higher strength and superior seaming capabilities compared to PVC. Although the Closure Plan did not specifically include information on the compatibility of PVC pipe, 30 mil PVC liner (item No. 4 in EPA's clarification) was tested and found to be compatibility and, by extension, HDPE and PVC pipe would be compatible for use at the RCRA Ponds. The perimeter gas collection piping (item No. 2 in EPA's clarification) is PVC, ET cap drainage system pipe (item No. 3 in EPA's clarification) is HDPE, and LCDRS (item No. 5 in EPA's clarification) piping from the collection system to the manholes is HDPE. In an August 20, 2012 email, FMC recently forwarded the Closure Plan compatibility information (Section 7.2.4 excerpt and Appendix N from the Pond 15S Closure Plan) and a Chart of PVC Chemical Resistance that confirms PVC is compatible with ("good" resistance to) phosphine, phosphorus pentoxide and phosphoric acid. Based on prior compatibility evaluations, the presence of phosphine beneath the cap will not adversely affect "critical infrastructure." The excellent condition of the Pond 15S cap geosynthetic layers (geotextile, geonet, HDPE liner and GCL) and perimeter gas collection pipe was confirmed during installation of the new connection to the perimeter piping and outlet at the west end of Pond 15S despite likely being in contact with PH3 concentrations as high as 170,000 ppm in the Pond 15S perimeter pipe system as calculated for the source gas extracted from the former west standpipe in May 2010.

As stated above, the Framework will prevent PH3 from accumulating beneath the caps by triggering gas extraction and treatment at concentrations far below the levels previously observed at Pond 15S and Pond 16S. The information provided in this response will be included in the discussion of the basis for the perimeter pipe trigger level for gas extraction and treatment in the Final Update of the Phosphine Assessment Study.

2. *FMC seems to assume that the conceptual site model has held true for all ponds at all monitoring points. This is not the case for soil. FMC must do a more detailed pond-by-pond analysis of the data to determine what monitoring is appropriate. An integrated monitoring framework starts with the conceptual site model and expands to address the exceptions. FMC's proposed framework falls short because it looks at the site model as the rule, ignoring exceptions. This is not protective and must be modified.*

EPA Clarification: During the conference call, FMC asked for clarification on reference to soil in second sentence and whether this part of the comment related to soil gas monitoring results to date. EPA said no, the comment is not directed at soil gas monitoring data and

the second sentence should be disregarded. EPA further clarified the comment is focused on “exceptions” that should be considered for certain ponds and thus for the long-term monitoring. During the call, the spatial variability of TMP and perimeter standpipe monitoring results at Pond 16S was cited as the “exception” referenced.

FMC Response: The Assessment Report and 1Q12, 2Q12 and 3Q12 Update Tech Memos describe the non-uniform distribution of PH3 within the heterogeneous fill materials under the final cap and the consistent difference in PH3 concentrations that is evident in the perimeter pipe at ponds with multiple standpipes (e.g., the Pond 16S north standpipe, Pond 18A east standpipe and Pond 17 southwest standpipe have consistently had the highest PH3 concentration throughout the monitoring to date). The same consistent, non-uniform distribution of PH3 concentrations is evident in the Pond 16S TMPs as described in the Assessment Report and 1Q12, 2Q12 and 3Q12 Update Tech Memos. The EPA clarification of this comment specifically noted that Pond 16S TMPs 5, 1 and 6 (consistently highest TMP PH3 concentrations) at the west / southwest end are nearer to the west perimeter pipe standpipe (consistently lowest perimeter standpipe PH3 concentrations) as an “exception.” FMC must point out that the highest Pond 16S soil gas results to date have been at probes 11 and 12 located immediately west and east, respectively, of the north perimeter standpipe (consistently highest perimeter standpipe PH3 concentrations). FMC considered all of the monitoring results for all of the ponds during development of the Framework as evidenced by the overall pond-by-pond summaries contained in Tables 4.1 to 4.8.

The Framework for long term monitoring and triggers for increased monitoring frequency, maintenance, additional monitoring elements and/or gas extraction and treatment does not rely on (1) any assumed distribution of PH3 beneath the final cap or (2) on a defined relationship between monitoring points (e.g., ratio of TMP to perimeter pipe concentrations, ratio of perimeter pipe to soil gas concentrations). As described in Section 5 of the Framework, the monitoring focuses on (1) monitoring appurtenances that have been or could be points of release and sets action triggers based on OSHA PELs that are protective of maintenance (and other) personnel within the RCRA Ponds and (2) monitoring perimeter pipe concentrations to track the PH3 concentration and any trends, and, (3) commencing gas extraction and treatment when/if the perimeter pipe concentrations (as measured at the highest concentration standpipe at ponds with multiple standpipes) approaches the LEL to prevent potential damage to the gas collection piping system and other critical infrastructure. No changes to the monitoring points, frequency or concentration triggers are suggested or warranted relative to development of Section 3 of the aPCP. The information provided in this response will be included in the Final Update of the Phosphine Assessment Study.

Specific Comments

3. *Section 3.0, page 2: in the first bullet in this section, FMC states that the Assessment Study Report shows that Pond 8S, 8E, 9E and the Phase IV ponds indicate low potential for releases to ambient air. There have been releases to ambient air around the TMP enclosures at 8E. While the source of the phosphine was identified and repaired, this event demonstrates the need for proactive maintenance.*

This paragraph also states that lines of evidence show that the trigger for additional monitoring and/or extraction is higher than 1,700 parts per million (ppm) in perimeter pipe, but does not provide any support for that statement or for the concept of having a higher trigger at some ponds than others. Low potential for release could be used to justify a reduced monitoring frequency, but it seems that at a given concentration, the potential for release or damage to infrastructure would be the same at any pond.

FMC Response: As stated in the comment, a detection of 0.03 ppm PH3 and 2.64 ppm PH3 was recorded inside TMPs 8E-1 and 8E-3, respectively during the Site-Wide Gas Assessment (July - August 2010). Per the Site-Wide Gas Assessment Report, both of these detections were traced back to a remnant of the construction of the concrete pad upon which the TMP enclosures sit, and the superfluous PVC conduits have since been sealed with grout. Following permanently sealing the superfluous PVC conduits, appurtenance monitoring was performed at Pond 8E monthly from October 2010 to September 2011, and quarterly during November 2011, and February, May and August 2012. Phosphine was not detected during any of these appurtenance monitoring events at Pond 8E. The 2 years of monitoring results after sealing the PVC conduits at Pond 8E supports the statement that this pond has a low potential for release to ambient air.

FMC agrees that performing needed maintenance is a priority. The Framework includes performance of maintenance and re-monitoring within 10 days of a triggering monitoring result (outside appurtenance > 0.05 ppm or inside appurtenance > 0.3 ppm). The “within 10 days” requirement for maintenance is consistent with Title 40, PART 60, Subpart WWW—Standards of Performance for Municipal Solid Waste Landfills, § 60.755(c)(4).

The Framework references the reader to the *Assessment Study Report* for the data and evaluations that support this statement that was taken directly from that report. We do not understand how the reader infers that the Framework proposes “the concept of having a higher trigger at some ponds than others.” The Framework for long term monitoring and triggers for increased monitoring frequency, maintenance, additional monitoring elements and/or gas extraction and treatment are the same for all of the RCRA Ponds as presented on Figures 5.1 and 5.2 and Table 5.1. No changes to the monitoring points, frequency or concentration triggers are suggested or warranted relative to development of Section 3 of the aPCP. The information provided in this response will be included in the Final Update of the Phosphine Assessment Study.

4. *Section 4.0, page 3: As discussed in general comment 1, this paragraph refers to predicting potential releases to ambient air that threaten human health and the environment. The Post-closure Plan must also prevent potential releases that either result from infrastructure damage or could cause infrastructure damage (e.g., autoignition). In addition, as shown by the work to repair both the gopher damage on Pond 18A and the west standpipe on Pond 15, excavation does periodically occur on and around the caps, which means that soil concentrations need to be kept low enough that the ponds will not present a potential risk to workers during excavation.*

FMC Response: Please refer to the response to General Comment 1 with respect to protection of infrastructure. FMC acknowledges that future maintenance of the final cover systems may include intrusion (excavation) within the limit of the final cover and/or within 20 feet of the anchor trench. Similar to the Pond 18A Gopher Burrow Maintenance Work Plan (September 2011) and Pond 15S New Gas Collection Outlet Work Plan (August 2012), FMC will prepare a work plan specific to the scope of any future intrusive maintenance work within the limit of final cover that will identify worker safety procedures that may be needed in addition to those specified in the Site-Wide Health and Safety Plan and incorporated RCRA Pond Area Work Rules. As an example, additional procedures such as the installation of a temporary soil gas probe(s) at the specific location of the needed maintenance (as was done at the Pond 15S new gas collection outlet project) will be considered during the job planning and safety analysis on a project-specific basis. The Framework (and Section 3 of the amended Post-Closure Plan) cannot reasonably address all of the potential future maintenance scenarios and cannot replace the need for project-specific planning and safety analysis. Section 3 of the aPCP will include a provision that specifies temporary soil gas monitoring probe(s) may be installed to support a project-specific safety analysis prior to performing work should intrusive maintenance work be required within the limit of final cover.

5. *Section 4.1, page 3: The first paragraph of this section states that results from Ponds 8S, 8E, 9E, 17, and the Phase IV Ponds are not very useful in identifying predictive monitoring elements. Nonetheless, as noted above, FMC has proposed a trigger of 1,700 ppm for these ponds. In the absence of data, FMC must justify why this proposal is adequate.*

FMC Response: The full sentence referenced in this comment is “Because virtually all the monitoring results to date for Ponds 8S, 8E, 9E, 17 and the Phase IV ponds are 0.00 ppm PH₃, the results from these ponds are not very useful for identifying a subset of predictive monitoring elements.” The extensive monitoring data set of 0.00 ppm results is not an “absence of data,” rather the data support the findings in the Assessment Study Report that are summarized in the first bullet under Section 3, page 2: “As detailed in the *Assessment Study Report*, the monitoring results from Ponds 8S, 8E, 9E and the Phase IV ponds indicate a very low potential for PH₃ release to ambient air at concentrations that could represent a potential threat to human health and the environment. The data from these ponds provide lines of evidence that the trigger for additional monitoring and/or phosphine gas extraction is higher than 1,700 ppm PH₃ in perimeter pipe.” (emphasis added).

Nowhere in the Framework is a PH₃ concentration of 1,700 ppm proposed as a trigger for any action at any of the ponds. The Framework for long term monitoring and triggers for increased monitoring frequency, maintenance, additional monitoring elements and/or gas extraction and treatment are the same for all of the RCRA Ponds as presented on Figures 5.1 and 5.2 and Table 5.1. No changes to the monitoring points, frequency or concentration triggers are suggested or warranted relative to development of Section 3 of the aPCP. The information provided in this response will be included in the Final Update of the Phosphine Assessment Study.

6. *Section 4.1, page 5: The first paragraph on this page states that perimeter surface concentrations are a trailing indicator. This is true, but monitoring of surface concentrations is still important for assessing potential exposure. Surface monitoring should be included as a response to elevated concentrations in the perimeter pipe or TMPs or to finding cracks/holes/other damage on the cap.*

At the end of the second paragraph on this page and in Section 4.4 (page 8), FMC states that monitoring low spots has not been and is not likely to be relevant. This statement is inconsistent with FMC's April 26, 2010, response to EPA's information request (FMC Report on Phosphine at FMC Pond 15S). In section 2.1 of the Report, FMC noted that phosphine levels above 1.0 ppm were occasionally observed in the vicinity of the temperature/pressure instrument panel beginning in late 2009, despite repairs to the instrument panels. Low spot monitoring on a case-by-case basis is not reactionary but necessary.

In the last paragraph on this page, FMC discusses "false positive" alarms. There have been a number of "false positives" over the course of monitoring. FMC must describe what criteria or conditions are relevant for evaluating and determining whether any particular alarm or low level reading is an actual alarm or a "false positive."

FMC Response: With respect to the first paragraph of EPA's comment, FMC's RCRA Pond Area Work Rules require all workers within the RCRA Pond area wear a functioning, calibrated PH3 monitor, which is the most effective means to assess potential exposure. Nonetheless, as an additional precaution, Section 3 of the aPCP will be drafted to include a requirement for monthly perimeter surface scans at any pond where the perimeter pipe concentration exceeds 10,000 ppm PH3. This requirement would add perimeter surface scans (weather permitting) to the monthly appurtenance ambient air, leak detection and inside monitoring specified for perimeter pipe PH3 concentrations greater than 10,000 ppm. The scan results would be integrated in the same trigger / response scheme as "Response If Appurtenance Ambient Air and Leak detection Reading > 0.05 ppm" on Table 5.1 which is to perform maintenance and re-monitor within 10 days.

With respect to the second paragraph of EPA's comment, the comment seems to rely on FMC's April 26, 2010 response to EPA's information request (*FMC Report on Phosphine at FMC Pond 15S*) to justify a need for low level monitoring. However, the comment does not acknowledge that at that time PH3 concentrations were as high as 170,000 ppm in the Pond 15S perimeter pipe system. The Framework monitoring and triggers for maintenance, increased monitoring and/or gas extraction and treatment will prevent accumulation of PH3 beneath the final cap to those levels that resulted in PH3 detections in the vicinity of the Pond 15S temperature/pressure instrument panel. Furthermore, the RCRA Pond Work Rules require investigation of any confirmed industrial hygiene alarm and a low lying area investigation.

The final paragraph of the comment seeks a description of criteria or conditions for determining whether a PH3 monitor reading is an actual alarm or a "false positive" and states there have been a number of false positives. The comment does not make the important distinction that the false triggering of fence line monitoring described in the last paragraph of page 5 is only for

the continuous monitors and is based on an evaluation of the downloaded logged data. FMC has also described “false positive” readings on continuous monitors (again based on downloaded data) in *Evaluation of Logged Non-Zero Maximum Readings using Draeger Pac III Phosphine Monitors at Pond 18A Continuous Monitoring Station 3*, July 8, 2011. As described in that document, the PH3 monitors are cross sensitive to internal combustion engine exhaust and can experience sensor drift and electronic malfunctions while deployed in the field under sometimes harsh weather conditions. The Draeger PAC III monitors are also cross-sensitive to H₂S and SO₂ gases which are present at the neighboring chemical plant.

FMC has not asserted that any real time PH3 monitor reading is “false,” rather FMC has noted that contingent monitoring has been falsely triggered based on downloaded continuously logged data. FMC has not proposed to discount any real time PH3 monitoring reading as ‘false’ in the Framework. The perimeter surface scan, appurtenance, soil gas, perimeter pipe and TMP monitoring are performed following procedures that minimizes (for surface scans and appurtenances) and eliminates (for soil gas, perimeter pipe and TMPs) the potential for cross-interferences from vehicle/equipment exhaust or off-site air sources (H₂S, SO_x). In addition, field personnel can verify proper zeroing of the monitor prior to initiating each monitoring station. For these reasons, there is no need to describe criteria or conditions for “false positives” in the Framework because all the monitoring is real time (i.e., no continuous monitoring is included in the Framework for long-term monitoring).

7. *Section 4.2, page 6: The second bullet in this section discusses soil gas data trends. This bullet needs to address the influence of seasonality on soil gas trends. For example, seasonal variation could account in part for the poor R² for shallow soil gas probe 2 at Pond 18A.*

FMC Response: As the second bullet in Section 4.2 is a summary of the monitoring results and evaluation presented in the Assessment Study Report and 1Q12 and 2Q12 Update Tech Memos, this comment appears to apply to the 2Q12 Update Tech Memo. A discussion of the Pond 18A soil gas results that the comment suggests are “seasonally influenced” is contained in the 1Q12 Update Tech Memo as follows:

“The March 6 and 22, 2012 soil gas monitoring results, particularly at shallow probes 2, 3 and 4 and step-out probes 2A, LS-2A and LS-2B, are likely influenced by the trend in barometric pressure preceding the monitoring event as shown on Figures 4-6e and 4-6f.”

Removing the March 6 and 22, 2012 from the probe 2 data set does improve R² for the best-fit regression on the results from shallow soil gas probe 2 from 0.12 to 0.27 (for the results from November 22, 2011 to September 18, 2012). However, the statement “any prediction regarding future soil gas monitoring results would be highly speculative” remains appropriate. No changes to the monitoring points, frequency or concentration triggers are suggested or warranted relative to development of Section 3 of the aPCP. The information provided in this response will be included in the Final Update of the Phosphine Assessment Study.

8. *Section 4.2, page 7: Removing all soil gas probes as a response to elevated readings in some probes is not a reasonable approach to controlling potential exposures. A preferred approach would be to maintain the probes and establish a trigger level that would prevent potential exposures at levels of concern. A proper maintenance plan and appropriate action levels will eliminate FMC's concern regarding potential exposures.*

FMC Response: The recommendation to remove the soil gas probes is not a response to the identification of soil gas probes as conduits for release during perimeter surface scans at the northwest corner of Pond 15S. Rather, as described in the Framework, soil gas monitoring is not effective for predictive monitoring and is not proposed as an element of the long-term monitoring program. As the soil gas probes will not be used in the future, the probes should be removed and filled as a proactive action to prevent the possibility the probes could be conduits for PH3 release in the future. The recommendation for abandonment of the soil gas probes is similar to abandoning groundwater monitoring wells that are no longer used to prevent the wells from becoming potential conduits for contaminants to groundwater. Shallow soil gas probes could be readily installed in an area where intrusive maintenance work within the limit of final cover may be required in the future (see response to Specific Comment 4, above). No changes to the monitoring points, frequency or concentration triggers are suggested or warranted relative to development of Section 3 of the aPCP. The information provided in this response will be included in the Final Update of the Phosphine Assessment Study.

9. *Section 4.3, page 7: The first paragraph in this section states that perimeter pipe standpipes are more representative of phosphine concentrations and trends. This statement is not consistent with perimeter pipe, soil, and temperature monitoring point (TMP) data showing that high soil and/or TMP concentrations are sometimes located adjacent to standpipes with lower concentrations. For example, at Pond 16S elevated phosphine concentrations are not detected in the west standpipe adjacent to TMP5, but the phosphine concentration in TMP5 is above the lower explosive limit (LEL) and phosphine is detected in the soil gas monitor nearest the west standpipe. While the perimeter pipe purges a larger volume of air than the TMP, we do not know what part or area of the pond is being sampled from the perimeter pipe. During gas extraction and treatment system (GETS) operation, data showed the highest phosphine concentrations in the vicinity of TMP5 and the lowest in the area of TMPs 2 and 3. This is consistent with current TMP sampling data. Therefore, perimeter pipe data is likely is not representative of phosphine concentrations throughout the Pond, even within the perimeter pipe. To prepare the framework properly, FMC must consider waste placement records, the elevations of the TMPs and perimeter pipes, and the correlation between phosphine concentration in the TMP and adjacent perimeter piping. Where the correlation is poor, the model does not hold and additional monitoring is appropriate.*

FMC Response: Please refer to the response to General Comment 2. Additionally, please note that FMC has never taken a position that perimeter pipe concentrations are representative of the level throughout the pond, beyond a very simplistic correlation that higher perimeter pipe concentrations are associated with higher pond concentrations as measured in TMPs, when one pond is compared to another. Rather, perimeter pipe concentrations are generally representative of the concentration of phosphine proximal to the subsurface gap

between the pond liner anchor trench and the final cap anchor trench which potentially allows for lateral migration of PH3 into the cap drainage piping and / or conduit (for the temperature / pressure monitoring control wires) that represent potential preferential pathways for migration / accumulation outside the final cap anchor trench. No changes to the monitoring points, frequency or concentration triggers are suggested or warranted relative to development of Section 3 of the aPCP. The information provided in this response will be included in the Final Update of the Phosphine Assessment Study Report.

10. Section 4.3, page 7/8: FMC's statement that appurtenance monitoring provides appropriate spatial coverage to detect potential releases ignores the fact that once phosphine is detected in an appurtenance it is an actual release, not a potential release. As mentioned in comment 1, FMC's focus on releases to ambient air as being the only threat to health and the environment is incorrect.

EPA Clarification: EPA confirmed the second paragraph of this comment references Section 5.0 and the last bullet (or second bullet following the second paragraph) on page 9. The second paragraph of the comment and FMC's response is thus shown separately below.

FMC Response: As described in the response to General Comment 1, FMC believes the Framework for long term monitoring and triggers for increased monitoring frequency, maintenance, additional monitoring elements and/or gas extraction and treatment is protective of the pond and final cover system infrastructure. Therefore, the focus of the monitoring is properly placed on detecting potential or actual releases that could threaten human health and the environment. In addition, as described in the response to Specific Comment 11, FMC has agreed to apply an appropriate safety factor that lowers the inside appurtenance and perimeter pipe PH3 concentration triggers for gas extraction and treatment.

Second paragraph of Specific Comment 10: In the second bullet of the last paragraph, FMC discusses the fact that quarterly monitoring would have been adequate to determine that gas extraction is not triggered. Essentially, this is an analysis of the monitoring with respect to false positive results. Without a parallel discussion of the adequacy of quarterly monitoring to detect the need to begin extraction in a timely manner (the potential for false negatives), there is no support for the assertion that decreasing the monitoring frequency will be protective. The same holds true for the discussion of monitoring frequency at Pond 18A in the first bullet on page 10.

FMC Response: The first bullet referenced in the comment states "monitoring under the framework would have identified the trend and PH3 concentration range (i.e., > 2,000 ppm and < 10,000 ppm) at Pond16S in the same timeframe as the *Air Monitoring Plan* and *Assessment Study* monitoring programs and the status of Pond 16S would be the same (i.e., the need to reinstitute gas extraction and treatment has not been triggered and routine monitoring of appurtenances and perimeter pipe would continue)." The second bullet referenced in the comment makes the same statement with respect to Pond 18A. The Framework monitoring frequency and triggers for increasing the monitoring frequency if PH3 concentrations increase

was developed by reviewing the monitoring frequency and results obtained from the Assessment Study.

As shown on Figures 5.3 and 5.4, the Framework monitoring frequency was overlain on the assessment study monitoring results (frequency of monitoring) for Ponds 16S and 18A and shows graphically that the proposed Framework monitoring frequency would have adequately identified the magnitude and rate (trend) of the increase of perimeter pipe PH3 concentrations which is not an analysis of 'false positives' as stated in the comment. These graphs also show that monthly (and at times bi-monthly) monitoring at Ponds 16S and 18A when the perimeter pipe concentrations were below 2,000 ppm was not necessary and a lower frequency of monitoring would have adequately tracked the magnitude and rate (trend) of the increase of perimeter pipe PH3 concentrations. FMC does not believe that gas extraction is needed (has not been triggered) at either Pond 16S or 18A based on the PH3 monitoring to date (through October 9, 2012). Assuming the perimeter pipe concentrations at Ponds 16S and 18A eventually increase to the Framework trigger for monthly monitoring (10,000 ppm in perimeter pipe) at these ponds, there would then be a potential one month "gap" between monitoring events that could be above the appurtenance and/or perimeter pipe triggers for gas extraction and treatment. When/if triggered, the monthly appurtenance and perimeter pipe monitoring frequency in the Framework would be the same as under the current EPA-approved monitoring schedule for Ponds 16S and 18A under the Air Monitoring Plan and Phosphine Assessment Study provisions of the RCRA Pond UAO. No changes to the monitoring points, frequency or concentration triggers are suggested or warranted relative to development of Section 3 of the aPCP. The information provided in this response will be included in the Final Update of the Phosphine Assessment Study.

11. Figures 5.1 and 5.2: Concentrations inside appurtenances up to the immediately dangerous to life and health concentration (IDLH) or perimeter pipe concentrations up to the LEL are unacceptable under any circumstances. Gas extraction and treatment should be triggered at a lower level that incorporates an acceptable margin of safety. Under these flow charts, there could be concentrations at the IDLH in the appurtenances and at the LEL in perimeter pipe and FMC would only be conducting quarterly and monthly monitoring, respectively. It would be several months before the situation would be detected, reported or resolved.

FMC Response: FMC agrees that an appropriate safety factor should be applied to the inside appurtenance (50 ppm) and perimeter pipe (20,000 ppm) PH3 concentration triggers for gas extraction and treatment. After reviewing the propagated relative error for the calculation of source gas concentrations when using a GES unit for routine monitoring and gas extraction, the propagated relative error is 15% (rounded up from 12.5%). As an added margin of safety, FMC "doubled" the propagated relative error which would reduce the perimeter pipe concentration that would trigger gas extraction and treatment (within 10 days) to 14,000 ppm PH3 (70 percent of the LEL). Although the inside appurtenance monitoring has been and will be performed by directly reading the result on a PH3 monitor (Draeger monitors have an accuracy of $\pm 5\%$ of the displayed value), FMC applied the same 30% margin of safety to reduce the inside appurtenance concentration that would trigger gas extraction and treatment (within 10 days) to 35 ppm PH3 (70 percent of the IDLH). Section 3 of the aPCP will be drafted to reflect these trigger levels.

12. Figure 5.1: If elevated concentrations of phosphine are detected after maintenance, the next step is to determine if it is the third exceedance. If it is not, monitoring reverts to quarterly. This means that an additional six months (two more exceedances) could pass before a problem is addressed. This is unacceptable.

In addition to the periodic monitoring proposed in this figure, appurtenance monitoring must be conducted whenever personnel are working on an appurtenance and periodic monitoring.

This figure proposes triggers outside the appurtenances at 0.05 ppm and inside the appurtenances at greater than 50 ppm inside appurtenances. The meters that FMC has used in the past have “pegged” at 20 ppm. Does FMC have one meter that is capable of providing accurate readings at concentrations ranging from 0.05 to 50 ppm?

FMC Response: The commenter appears to misunderstand the monitoring frequency, actions and re-monitoring presented on Figure 5.1. Two hypothetical examples that follow the “maximum timeframe” for appurtenance monitoring / action pursuant to Framework Figure 5.1 are presented below:

Hypothetical Example 1.

Days (from initial monitoring)	Monitoring Result or Action	Notes
0 (routine appurtenance monitoring)	Inside reading > 0.3 ppm, < 1 ppm	
10	Perform maintenance, re-monitor inside result > 0.3 ppm, < 1 ppm	1 st re-monitoring
20	Perform maintenance, re-monitor inside result > 0.3 ppm, < 1 ppm	2 nd re-monitoring
30	Perform maintenance, re-monitor inside result > 0.3 ppm, < 1 ppm	Third consecutive, monitor perimeter standpipe within 10 days, result < 2,000 ppm
40	Perform maintenance, re-monitor inside result < 0.3 ppm	Re-monitor within one month
70	Re-monitor inside result < 0.3 ppm	Continue quarterly or revert (if initial result obtained during annual schedule) to quarterly monitoring

Hypothetical Example 2.

Days (from initial monitoring)	Monitoring Result or Action	Notes
0 (routine appurtenance monitoring)	Inside reading > 1 ppm, < 35 ppm	
10	Monitor perimeter pipe standpipe(s), result < 2,000 ppm; perform maintenance, re-monitor inside result > 1 ppm, < 35 ppm	1 st re-monitoring
20	Monitor perimeter pipe standpipe(s), result > 2,000 ppm; perform maintenance, re-monitor inside result < 0.3 ppm	2 nd re-monitoring Begin quarterly perimeter pipe and appurtenance monitoring (Figure 5.2 and Table 5.1)
50	Re-monitor inside result < 0.3 ppm	Re-monitor within one month
90	Quarterly appurtenance and perimeter pipe monitoring	Continue monitoring per schedule and triggers / actions on Figure 5.2 and Table 5.1

As shown in these hypothetical examples, we do not understand how the commenter concluded that “an additional six months (two more exceedances) could pass before a problem is addressed.”

FMC’s RCRA Pond Area Work Rules require all workers within the RCRA Pond area to wear a functioning, calibrated PH3 monitor. This requirement applies to personnel conducting monitoring and / or maintenance at appurtenances or any work within the RCRA Pond area. The required use of personal PH3 monitors remains appropriate for protecting workers from potential occupational exposures to PH3 within the RCRA Pond area rather than a requirement to monitor locations where work is not being performed (for example inside an appurtenance when the work is entirely outside the appurtenance).

As specified in numerous UAO submittals, FMC maintains and calibrates PH3 monitors with sensors that measure PH3 in the 0.00 to 20.00 ppm range (Hydride (XS)) and the 0 to 1,000 ppm range (PH3-HC (XS)). In the circumstance that a monitor with the 0 to 20 ppm sensor reads 20.00 ppm, a monitor with the 0 to 1,000 ppm sensor would be used to obtain a reading within that range.

FMC Response, October 15, 2012

To:

Idaho Department of Health and Welfare Comments to the Framework for Post-closure
Phosphine Monitoring

Emailed by EPA to FMC on September 07, 2012

Two specific elements of the comments identified by EPA during a telephone call on
September 13, 2012 for response

1. *It is not clear what the frequency monitoring for pond 17 will be.*

FMC Response: Under the Framework, appurtenance and perimeter pipe monitoring would be quarterly “based on expected perimeter pipe standpipe concentration less than 2,000 ppm one month after cessation of gas extraction on December 15, 2011” as stated in the second bullet on page 10. During the December 2011 perimeter pipe monitoring at Pond 17, the results for the four (4) standpipes were 0.00, 2.32, 2.81 and 0.57 ppm (reported in the *Assessment Study Report*). There currently is no requirement to perform perimeter pipe monitoring at Pond 17 under approved UAO work plans and no perimeter pipe monitoring has been conducted since December 2011, consistent with the emails exchanged between FMC and EPA in May 2012 in preparation for a conference call on May 23, 2012 regarding the PH3 monitoring program at the RCRA Ponds under the UAO. Thus, the Framework describes the Pond 17 quarterly monitoring frequency as “likely” based on the expectation that the perimeter pipe PH3 concentration is still below 2,000 ppm.

2. *Page 1, Section 1, first paragraph. The document states that phosphine monitors were and are required to prevent potential exposure to personnel at the site above OSHA PELs. It would be good to add this value as well as Short-Term Exposure Limit (STEL), and the Immediately Dangerous to Life or Health (IDLH) PH3 limits listed in the Site-Wide Health & Safety Plan for a better understanding when comparing PH3 limits to monitoring values listed the document.*

FMC Response: The FMC Site-Wide Health & Safety Plan includes the following table:

Summary of Phosphine Exposure Limits	
Permissible Exposure Limit (PEL)	0.3 ppm
Short-Term Exposure Limit (STEL)	1.0 ppm
Immediately Dangerous to Life or Health (IDLH)	50 ppm

This table will be included in Section 3 of the aPCP as well as the Final Update of the Phosphine Assessment Study.